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ABSTRACT

This curriculum guide for high school students contains 20 information acquisition lessons, 6 values awareness lessons, and 5 open-ended discussion lessons. Some lessons contain activities that extend over several days; other lessons contain one specific activity. The nutrition education goals are directed toward the attainment of nutrition subject matter, which is organized into five topics. The identified topics serve as a foundation for nutrition instruction, curriculum development, and evaluation. The topics include the following categories: (1) food choices as related to the attainment of optimal health; (2) factors influencing food choices, e.g., lifestyles, peers, and families; (3) food-related careers--needs, roles, responsibilities, and educational requirements; (4) consumer competencies; and (5) food handling. Activity materials for students are included. (JD)

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Nutrition Education
Choose Well Be Well

A Curriculum Guide for High School

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Nutrition Education
Choose Well Be Well

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Preface

National attention increasingly is being focused on the importance of nutrition for good health. Studies have shown that nutrition plays a direct role in students' overall mental and physical development. We must focus on the important task of improving the nutrition and the quality of our students' lives through an ongoing, effective nutrition education program. To accomplish this task, we must change students' attitudes toward food, modify their eating habits, and improve their ability to use nutrition information.

Nutrition Education—Choose Well, Be Well, a series of nutrition education curriculum guides, was designed to assist educational agency personnel in the initiation, expansion, and improvement of nutrition education programs. The *Nutrition Education—Choose Well, Be Well* series is not a prescription for learning, but rather a resource from which teachers and food service personnel can acquire ideas to develop relevant curricula for specific learning groups.

Nutrition Education—Choose Well, Be Well is divided by age spans: preschool age and kindergarten, primary grades, upper elementary grades, junior high, and senior high school. Within each age span, lessons are organized by grade level and contain activities that may extend over several days. All activities contribute to students' abilities to reach the expected performance levels identified in the *Minimum Proficiency Levels for Nutrition Education in California Schools.*

The goal of nutrition education and the *Nutrition Education—Choose Well, Be Well* series is to provide opportunities through which individuals develop the knowledge and skills necessary to make wise food choices that will contribute to their overall health and well-being throughout their lives.

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Introduction to the Curriculum

Many Americans do not eat wisely. Influenced by misleading food advertisements and diet fads and rushed by the demands of work and home, these people often make food choices based on convenience and give little or no thought to the nutritional contribution of the foods selected. As nutrition studies have shown, this failure to select food wisely is responsible in part for many Americans having less than optimal health.

What can be done? Nutrition educators are attempting—through efforts such as the *Choose Well, Be Well* curriculum series—to help individuals obtain the knowledge and skills necessary to make food choices that will contribute to their overall health throughout life. The result of this instruction, it is hoped, will be life-long improvement in the well-being of all Americans.

Role of Nutrition Education in the Curriculum

Many goals have been stated for education. Foremost, educational agencies have the demanding responsibility for educating the total individual. Nutritional status affects a person's mental and physical alertness. Therefore, nutrition education is a positive effort to maximize the learning potential of students.

Within the school curriculum, students can learn the importance of a nutritionally adequate diet through a positive daily lunchroom experience as well as through appropriate classroom reinforcement. Through a continuing and sequential educational process, students are able to transform knowledge about their nutritional needs and the nutritive value of foods into decisions affecting their eating behavior and promoting their health and well-being. Students can gain sufficient background for their nutrition decisions from educational experiences related to food choices, factors that influence food choices, appropriate methods of food handling, effective consumer practices, and food-related careers.

A nutrition education curriculum need not compete for teaching time with other curricula deemed important by the school. Nutrition education activities may be integrated into subject matter areas such as science, art, mathematics, social studies, language arts, and physical education.

Relationship of Nutrition Education to Health

A curriculum designed to meet the goals of nutrition education emphasizes health as a significant value in one's personal life. An important value, such as health, does not develop as the result of student exposure to a few "lessons." Rather, the value emerges and changes as students acquire, experience, and evaluate new information. A curriculum that attempts to foster health as a value allows students, throughout their school experience, to build their knowledge, to question, and to make decisions about personal health that will contribute continuously to their overall well-being.

Decision Making in Nutrition Education

The decision-making process is inherent in food selection. Decisions about food that are made daily do have a cumulative effect on an individual's health and well-being. Because the range of decisions individuals make affects their lives, one unique feature of the *Choose Well, Be Well* curriculum series is that lessons have been designed to enable students to make wise nutrition-related decisions. Lessons in the curriculum series provide accurate and current information, facilitate an awareness of students' own nutrition-related values, and provide opportunities for them to share their nutrition-related opinions and attitudes with others as part of the decision-making process.

Goals for Nutrition Education

The goals for nutrition education are developed from the *Health Instruction Framework for California Public Schools.* The nutrition instructional program is planned to enable students:

- To develop an understanding that eating patterns are dependent on interrelationships among physical, social, psychological, economic, and cultural factors
- To consider alternatives in meeting nutritional needs and to select various ways to achieve good nutrition within these eating patterns
- To develop eating patterns which contribute to wellness

The nutrition education goals are directed toward the attainment of nutrition subject matter, organized into *five* topics (referred to as concepts in the *Health Instruction Framework*). The identified topics serve as a foundation for nutrition instruction, curriculum development, and evaluation. The topics include the following categories:

- *Food Choices*—Daily food intake is related to the attainment of optimal health.
- *Factors Influencing Food Choices*—Life-styles, peers, and individual family resources reflect similarities and differences in food choices.
- *Food-Related Careers*—Needs, roles, responsibilities, and educational requirements affect an individual's choices in food and health nutrition-related careers.
- *Consumer Competencies*—Effective utilization of existing resources may enhance the potential for satisfying individual and family nutritional needs and wants.
- *Food Handling*—The quality and safety of foods are influenced by the handling, processing, and preparing of foods.

Minimum proficiency levels for students were developed in each of these topic areas to ensure the systematic achievement of the three goals from the *Health Instruction Framework.* The proficiencies providing the basis for the objectives and lessons in this curriculum are found in the publication *Minimum Proficiency Levels for Nutrition Education in California Schools.* (See Appendix D.)

Organization of the Curriculum

This curriculum guide contains twenty information acquisition lessons, six values awareness lessons, and five open-ended discussion lessons.

Some lessons contain activities that extend over several days; other lessons contain one specific activity. All activities contribute to students' abilities to reach the expected performance levels identified in the *Minimum Proficiency Levels for Nutrition Education in California Schools.*

How to Use the Curriculum

The recommended grade level for curriculum lessons given in Chart 1 suggests a method for satisfying the minimum proficiencies across all grade levels. Although a sequence for teaching the lessons is suggested, lessons are not restricted to the recommended grade level. It is more important that teachers be able to select lessons which fit in with their own sense of curricular sequencing. Teachers may select among lessons as well as among activities within lessons. Teachers are encouraged to adopt or adapt lessons which blend with their ongoing curriculum and meet the specific needs of their own students.

Teaching Strategies

Many aspects of nutrition education, such as selecting foods, require emphasis on knowledge and attitudes. Cognitive learning about nutrition and food choices is not sufficient for achieving the nutrition goals recommended in this guide. Rather, a balance of cognitive and affective learning allows students to make food decisions based on knowledge and an awareness of their own opinions and values.

Lessons contained in *Nutrition Education—Choose Well, Be Well* contribute to the balance between cognitive and affective learning necessary for students to make wise food choices. The lessons focus on three different teaching strategies: information acquistion, values awareness, and open-ended discussion.[1]

1. Information acquisition lessons

   Key Outcome:

   - Provides the students with basic knowledge and skills

   Process for Implementing the Teaching Strategy:

   - Inform the students of what they are to learn and describe how learning will be evaluated.
   - Make the specific information available to the students.
   - Provide practice for the students in recalling specific information by having them do such

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[1] Lesson classification and suggested teaching strategies are provided through the courtesy of Raymond Cowan, Gus T. Dalis, Dennis C. Loggins, Benedict B. Strasser, and the Office of the Los Angeles County Superintendent of Schools. This material was distributed by the Teaching Strategies Center, Division of Curriculum and Instructional Services, and was copyrighted in 1979.

Chart 1
Recommended Grade Levels for Curriculum Lessons

Curriculum lessons	Recommended grade level*								
	Preschool/ kindergarten	1	2	3	4	5	6	Junior high	Senior high
Food Choices Lessons									
Classifying foods	●	●		●					
Need for food	●								
Diet-related health problems		●	●						
Digestion			●		●				●
Basic food groupings			●			●			
Personal energy needs				●				●	●
School lunch pattern				●		●		●	
Six nutrient groups					●	●			
Planning nutritionally adequate meals							●	●	●
Total health and well-being									●
Food facts and fallacies									●
Physical fitness								●	
Influences on nutrient needs									●
Vegetarian diets								●	●
Whole grains								●	
Recommended Dietary Allowances									●
Factors Influencing Food Choices Lessons									
General environmental influences	●		●						
Aesthetic and sensory influences	●					●			
Cultural influences	●						●		
Between-meal snacks		●							
Home and social influences				●	●			●	●
Emotional influences								●	
Worldwide nutrition problems									●
Food-Related Careers Lessons									
Role of workers in food and health-related careers	●	●	●	●	●	●	●	●	

Recommended Grade Levels for Curriculum Lessons—Continued

Curriculum lessons	Recommended grade level*								
	Preschool/ kindergarten	1	2	3	4	5	6	Junior high	Senior high
Educational requirements									●
Nutrition in other disciplines									●
Consumer Competencies Lessons									
Advertising	●	●							●
Food waste	●		●						
Food labels				●				●	●
Influencing the school lunchroom environment					●				
Influencing the school lunch menu						●		●	
Unit pricing							●	●	
Influencing the food industry								●	
Evaluating the validity of nutrition information									●
Factors affecting food in the market place								●	
Wise food purchasing									●
Regulation of school lunch program									●
Food Handling Lessons									
Plant growth and production	●						●		
Sanitation	●	●							●
Food storage	●		●						
Food preparation	●			●		●		●	
Food-borne illness					●			●	
Food preservation								●	
Pesticides									●
Food processing									●
Enforcing sanitation requirements								●	

*NOTE: A solid bullet (●) indicates that a lesson addressing a specific proficiency is included in the identified grade level. These recommendations are not intended to be followed rigorously; rather, they are an outline of how a nutrition program might progress from one grade level to another grade level.

things as identifying, distinguishing, listing, and describing. Monitor the students' practice, and provide appropriate feedback.

- Use the evaluation described in each lesson to assess students' ability to recall the information specified.

2. Values Awareness Lessons

Key Outcomes:

- Allows students the opportunity to identify reasons for their choices and to label the reasons as values
- Allows students an opportunity for independent thinking and self-expression in a nonjudgmental atmosphere

Process for Implementing the Teaching Strategy:

- Ask students to focus on a particular issue or topic.
- Ask students to make a choice about the particular issue and give a reason for that choice.
- Assist students in clarifying their responses.[2]
- Inform students that while they are giving reasons for their choices, they are really talking about their values.
- Follow the activity sequence in the order given for the most effective use of this type of lesson.

3. Open-Ended Discussion Lessons

Key Outcome:

- Provides students an opportunity to share ideas and opinions in a nonjudgmental atmosphere

Process for Implementing the Teaching Strategy:

- Inform the students that the purpose of this activity is to give them an opportunity to express how they feel about a particular topic.
- Describe the rules for discussion:
    a. Explain to the students that as teacher or leader you will not give your opinion but that you will help make sure that all of the students will have a chance to talk if they wish.
    b. Explain that if the students do not understand what someone has said, they may ask that person for further clarification.
    c. Remind the students that people will have different ideas. They may disagree with the ideas of other people, but they should not make fun of what others think.
    d. Inform the students that they will take turns speaking in the discussion.
- Restate the particular discussion question you have chosen for class response and invite the students to share their thoughts and opinions.
- Follow the discussion sequence in the order given for the most effective use of this type of lesson.

Community and Parent Involvement

Community agencies and parents can be immensely helpful in contributing to the educational process. Frequently, they can provide assistance in implementing lesson activities, serve as classroom speakers, or provide print and audiovisual materials.

Food Service Involvement

The support of the food service department within educational agencies is essential to the success of nutrition education. Food service personnel have a keen interest in nutrition education and can be valuable members of the nutrition education team. Nutrition education staff members are encouraged to develop creative methods for integrating the food service program with the nutrition curriculum. The cafeteria should be viewed as a laboratory for the practice of nutrition and a culmination of the decision-making process which has been initiated in the classroom.

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[2] In some instances it will be necessary to follow student comments with further clarifying questions; i.e., "Would it be correct to say that one of your values about breakfast foods is that they are quick and easy to prepare?" Allow students to answer yes or no and thereby to consider whether or not the stated value is important to them.

Curriculum Lessons

The nutrition education lessons for senior high school students were designed as a resource for administrators, teachers, school food service employees, and others who wish to offer instruction about food choices, factors influencing food choices, food-related careers, consumer competencies, and food handling. The lessons and activities can be used in their entirety or selectively. Each lesson activity provides a complete and detailed description of procedures and required instructional materials appropriate to the procedure.

TOPIC FOOD CHOICES

Lesson 1. Food Facts and Fallacies

An information acquisition lesson designed to help students distinguish facts from fallacies concerning the nutritional value of foods

Objective

After completing this lesson, the students should be able to determine the validity or invalidity of a list of nutritional statements.

Key Facts

The following are some of the most reliable sources for nutrition information:

1. Nutritionists
2. American Medical Association's Council on Food and Nutrition
3. Foods and nutrition teachers and research scientists at colleges and universities
4. Federal Trade Commission (for information on fraudulent and misleading advertising)
5. United States Food and Drug Administration (for information on labeling and safeguards against contaminated foods)
6. Consumer and Food Economics Research Division of the United States Department of Agriculture
7. National and state consumer representatives
8. American Dietetic Association, Society for Nutrition Education, American Home Economics Association, and California Dietetic Association
9. Registered dietitians

See handout "Sources of Reliable Nutrition Information" on page J-145 for additional information.

Activities

Procedures	*Materials needed*
1. Distribute the "Nutrition Know-How" work sheet. Ask the students to complete the work sheet. Hand out the "Nutrition Know-How Answer Key," and discuss the answers with the students. You may wish to have the students explore more fully those questions that generated controversy or discussion. Suggest reliable resources that students can use to research questions. (This work sheet may be used as a pretest for this lesson.)	Work Sheet: "Nutrition Know-How," pages J-2 and J-3 Handout: "Nutrition Know-How Answer Key," page J-4
2. Number small pieces of paper from 1 to 24; repeat the numbering process until there are enough pieces of paper for every student. Put the pieces of paper into a bowl and have each student take one. Tell the students that the numbers on the pieces of paper correspond to the numbers of the statements on the "Nutrition Know-How" work sheet.	
Instruct each student to make an informational poster about his or her food fallacy. Distribute paper, food magazines, felt pens, scissors, tape, glue, and other materials for making posters. Display the posters around the classroom or school.	Poster materials
3. Divide the students into pairs. Distribute the work sheet "What's Your Advice?" Have each group of students decide on their answers together. Discuss the students' answers.	Work Sheet: "What's Your Advice?" page J-5
4. Present one or more of the following discussion questions to the students: a. How do you care for your health and appearance? Is this on a regular basis or once in a while? b. How important is it to you to have friends that are as slim, shapely, and good-looking as the people in health and beauty ads?	

Procedures | *Materials needed*

c. The United States probably spends more money on health and beauty than any other nation. What are the advantages? Disadvantages?
d. What kind of attitude will best protect you against health frauds or any other kind of fraud?
e. What are the current "in" diets or exercises of your friends?

After the discussion, inform the students that maintaining good health is their responsibility. Part of that responsibility is to make accurate judgments about the nutritional value of foods. Explain that advertising of food products may emphasize sweet tastes, attractive appearances, endorsement by a celebrity, or unusual qualities of a food. Consumers have a need for correct nutrition information to counteract the media emphasis on food fads.

5. Have the students observe television commercials on different channels over a two-to-four day period. Have the students tally the number of commercials for health products versus other products, such as beauty aids, cars, and so on. Ask the students to tally the commercials that use health and beauty as part of the sales pitch, even though health and beauty items are not the types of products advertised. (Explain subliminal advertising in which products may be shown in the background in the commercial for another product.)
6. Have the students trace the different types of health and beauty advertisements used over a particular time period. (Start around 1900.) Source material can be found in public libraries or even second-hand stores by looking through old magazines and catalogs.
7. Discuss *fallacy, myth,* and *fable* so that the students understand these terms.

Present a list of popular food myths to the students, like the following examples:

a. Fish is "brain food."
b. Ginseng delays aging.
c. Beets make the blood richer.
d. Eating fish and milk at the same meal makes one sick.
e. Thunderstorms curdle milk.
f. Garlic reduces high blood pressure.
g. Onions can cure a cold.

Ask the students to contribute more myths.

Assign the students to write a fable based on a food myth, such as the following:

a. "The Man Who Lived to 250 from Eating Ginseng"
b. "The Girl Who Got Smarter from Eating Fish Three Times a Day"
c. "The Onion That Cured a Cold"
d. "How the LaLa Tribe Stayed Healthy by Not Eating Fish and Milk Together"
e. "How the Thunderstorm Curdled the Milk"
f. "Magical Garlic Cures"
g. "The Beet That Made Rich Blood"

Have the students use the food myth list to write a report that disproves food myths. Have them use the library to gather specific nutrition facts and principles which support their report on myths. Invite a dietitian to speak to the class and to function as a resource person.

Procedures	Materials needed
Have the students prepare short oral presentations based on food myths. Use humor or exaggeration to point out fallacies.	
Example:	
People will believe almost anything. Just yesterday the milk in our refrigerator curdled. I convinced my mom that it was because of the terrific thunderstorm. Although she played tennis most of the day, she believed me.	
Have the students prepare posters of comic strips that exaggerate the fallacies of food myths. Place the posters in the cafeteria, in the hallways, and on bulletin boards.	
Have the students write short poems about the food items found in the food myths to stress the positive nutritional aspects and effects of the foods. Have the students stress sensory appeal, such as taste, sound, touch, sight, and smell.	
Example:	
"An apple a day keeps the doctor away."	
Apples Savory scarlet spheres Juicy guardians of good health Fighting for your body Crunch happily As you swallow Delectable!	
8. Point out that students involved in physical conditioning or athletic training programs must also be aware of fad diets popular for the athlete. Inform the students that a generally healthy individual who consumes a normal diet receives all the nutrients needed for a physical conditioning program.	
Recommendations such as protein supplementation or carbohydrate loading are not necessary and may even be harmful. (A test to distinguish a good diet from a fad diet is to check the diet for foods from the basic food groups. A balanced diet includes at least four serving of bread or cereal, four servings of fruit and vegetables, two servings of protein-rich foods, not necessarily meat, and three or four servings of milk products.)	
Distribute copies of the "Pregame Diet" work sheet. Review the recommendations given on the work sheet and have the students fill in the blanks with what they consider to be a good pregame diet or a pregame diet that they have been using. Have the students compare their pregame diet and the recommended meal plan given on the work sheet.	Work Sheet: "Pregame Diet," page J-6

Evaluation

1. Distribute the work sheet "Be a Nutrition Expert" on page J-7. Determine whether or not the students' answers are correct. Discuss the students' responses.
2. Distribute the "Nutrition Know-How" work sheet for use in a post-test critique. Determine whether or not the students improved.

Food Service Involvement

1. Ask the students to respond to this food fallacy statement: "School lunches are not nutritious." Ask the students to tell why this statement is false. Invite the food service director or cafeteria manager to class to

discuss the school meal pattern. (*Answer:* School lunches are specifically designed to provide approximately one-third of the Recommended Dietary Allowances [RDA] for children nine to twelve years of age, with recommendations for increasing the size of servings to meet the needs of teenagers. Each daily lunch may not provide one-third of the RDA for all nutrients; but when averaged over a period of time in which a wide variety of foods are served, the goal will be met. Since meal planning requirements allow for a variety of foods, it is assumed that other nutrients for which no RDA have been established or for which inadequate food composition data are available will also be supplied.)

2. Ask the students to think of ways they could help to change student attitudes about school lunches. (Possible suggestions include posters, brochures, skits, articles in the school newspaper, and so forth.) Offer the students extra credit if they wish to make a poster, write an article, or do something else.
3. Hold a breakfast or lunch in the cafeteria for athletic team members. Invite the food service manager or nutritionist to discuss proper eating habits for the athlete.

Notes

Answer Key

What's Your Advice? (page J-5)

1. The diet is unhealthy because it does not contain enough calories, it does not contain foods from all four food groups, and it does not provide all the nutrients needed.
2. Scientists say that there is no cure for the common cold. However, vitamin C may shorten the duration of a cold or lessen the severity of the symptoms. But, the benefits of large doses of vitamin C have not been subtantiated by research. Excessive use of vitamin C may be detrimental to one's health.
3. Tell her that honey actually has more calories, tablespoon for tablespoon, than white sugar has and that the amount of nutrients in honey is so small that they are inconsequential. Tell her to drink tea without sweetening if she wants to lose weight.
4. To be healthy, Jeremy needs foods from all of the food groups. He also needs all six nutrient groups. Carbohydrate is one of the nutrient groups and provides bulk, fiber, and many vitamins and minerals. An ounce of carbohydrate has less than half the number of calories as an ounce of fat. If Jeremy wants to lose weight, he should cut down on foods that are fried and that contain lots of fats and sugars. He should also limit the size of his servings and increase his physical activity.

Be a Nutrition Expert (page J-7)

1. Your body will not receive all the nutrients it needs if you consume only 500 calories a day.
2. All calories are the same.
3. Water contains no calories and, therefore, is not fattening.
4. Vitamin C does not cure colds because there are no cures for colds.
5. You do not need meat in your diet every day. Though it is a good source of many nutrients, it can be replaced with other foods that provide the same nutrients.
6. Vitamins are specific chemical compounds. The human body can use them equally well whether they are from natural or synthetic sources.

Lesson 2. Recommended Dietary Allowances (RDA)

An information acquisition lesson designed to help students identify the purpose of the Recommended Dietary Allowances

Objective

After completing this lesson, the students should be able to identify three characteristics of the RDA and list one purpose of the RDA.

Key Facts

See the handout "RDA Information," pages J-8 through J-10.

Activities

Procedures	*Materials needed*
1. Give the students the work sheet "Open-Ended Sentences" to complete. After the students have finished their statements, ask them the following question: Judging from your response to these statements, which types of foods do you choose by instinct (food likes)? (*Answers:* Sweets; gooey foods; foods I am used to having; foods I associate with pleasant experiences, such as parties; and so on.) Ask the students to list on the back of the open-ended statement work sheet reasons why instinct alone may not be a reliable guide for food choices. (*Answers:* May not get required nutrients; may not have required foods; may not make right choices for energy requirements; may choose expensive foods.) Have the students report their answers; summarize each student's response on the chalkboard or on an overhead transparency.	Work Sheet: "Open-Ended Sentences," page J-11
2. Ask the students to identify their reasons for choosing specific foods they eat. Include questions such as the following: a. What factors influence your food choices at home? b. What factors influence your food choices in the school cafeteria? c. What influences your selection of foods at work? At parties? d. How do you choose food for snacks? e. Do you choose foods differently when you eat with others than when you eat alone?	
3. Display a road map in the classroom. Ask for a volunteer to identify a destination, and discuss with the class various ways of reaching that destination. Summarize how a road map helps people reach their goal (destination). Rather than starting on a trip and choosing a route by "instinct" (I think or I feel I should go this way), it is better to look at a guide (map) and plan the best way to get there. Students who select foods to be healthy as their goal should be advised that there is a guide available which will help them reach that goal in the same way a map helps a traveler reach a destination. This guide is the Recommended Dietary Allowances (RDA). The RDA are the amounts of essential nutrients believed to be adequate to meet the known nutrition needs of most healthy persons.	Road map
Distribute copies of the handout "RDA Information" to each student. Review the list of facts and tables 1 through 3 with them to further explain RDA.	Handout: "RDA Information," pages J-8 through J-10

Procedures	*Materials needed*
4. Distribute to the students copies of handout "Sample Menus" and the work sheet "Menu Analysis." Ask the students to select one of the two menus to analyze for nutrient content. Distribute copies of the Nutrient Composition Table. Have the students complete the "Menu Analysis" work sheet by using the Nutrient Composition Table. (This may be done as a homework assignment.) Correct the work sheets and discuss them.	Handout: "Sample Menus," page J-12 Work Sheet: "Menu Analysis," page J-13 Nutrient Composition Table, Appendix C
Have the students work in groups of three or four to plan a day's menu that meets the calorie and nutrient needs of a teenage female or male. Distribute copies of the Food Group Guide to the students for use as a resource. Tell the students to include at least one serving from every food group, except the meat group, at each meal. Have the students record the menu and the amount of each food on the "Analyzing Your Menu" work sheet. Ask the students to determine the nutrient content of each food by completing the remainder of the work sheet. Remind the students that there are RDA for other nutrients, but the students need only research those listed on the work sheet. Have the students complete the questions on the work sheet.	Food Group Guide, Appendix F Work Sheet: "Analyzing Your Menu," page J-15
5. When planning a lesson on graph and chart reading, you may want to use the following activity to help students to achieve the objective. Have the students calculate answers for the word problems on the "Recommended Dietary Allowances" work sheet.	Work Sheet: "Recommended Dietary Allowances," page J-17
6. When planning a lesson on percents, decimals, and chart reading, the following activity may be used to help students achieve the subject matter objectives.	
Have the students complete the "Percent of RDA" work sheet. Discuss the correct answers.	Work Sheet: "Percent of RDA," page J-19

Evaluation

Distribute the "RDA Quiz" work sheet on page J-21. Determine whether or not the students' answers are correct. Discuss the correct answers with the students.

Food Service Involvement

Students may be interested in knowing the nutrient content and percent RDA of the foods being served at school. Consult food service personnel about the possibility of doing one or more of the following:

1. Posting charts in the cafeteria that show the RDA
2. Using flags on the serving line to indicate the nutrient content and percent RDA of the foods being served
3. Developing a legend that can be used on school lunch menus to identify nutrients and the percent of RDA
4. Placing mobiles in fast food serving areas to indicate the nutrient content and percent of RDA of the foods being served

Notes

Answer Key

Recommended Dietary Allowances (page J-17)

1. 3
2. 42 mg
3. 0, 0
4. 13
5. 9 mg, 9 mg
6. yes
7. orange
8. T-bone steak
9. 12 mg
10. 0

Percent of RDA (pages J-19 and J-20)

1. 20 percent
2. 40 percent
3. 0 percent
4. 50 percent
5. 55 percent

RDA Quiz (page J-21)

1. T
2. F
3. T
4. F
5. F
6. T
7. F
8. F
9. T
10. F
11. The RDA chart might help you to find shortages of certain nutrients in your daily food intake, to determine any excesses of nutrients in your daily food intake, to become familiar with the nutrients in different foods, and to become more discriminating in food choices. The daily eating habits you practice and pass on to your family may prolong your life and have a positive affect on your children's health, looks, and longevity.
12. Eating three meals a day will not guarantee an adequate nutrient intake unless the meals eaten include foods which provide these nutrients. What is important is the daily amount of nutrients consumed, not whether it is in three, five, or eight meals.

Lesson 3. Limited Food Resources

An information acquisition lesson designed to help students select a nutritionally adequate diet from limited food resources

Objective

After completing this lesson, the students should be able to select a nutritionally adequate diet from a group of choices of limited food resources.

Key Facts

It is unlikely that a healthy individual would suffer any health consequences from an occasional nonnutritious day. However, over the long run, it is extremely important to maintain eating habits which supply the necessary nutrients. Even when resources are limited, it is still important to choose a nutritionally balanced diet.

The resources which could affect eating patterns, if limited, include time, money, food, storage space, and equipment.

A simple way of determining the nutritional adequacy of the daily food intake is by using the Food Group Guide, Appendix F.

Activities

Procedures	*Materials needed*
1. As the students walk into class, distribute the handout "Earthquake Has Struck!" and have them read it. Discuss the questions. Ask if anyone has had personal experience surviving a natural disaster. Inform the students that, although this is an extreme case, there may be a time in their lives when the amount, type, and quality of food will be limited for one reason or another; yet, even with limitations, it is still necessary to choose a nutritionally balanced diet. The object of the lesson is to learn to choose a nutritionally adequate diet when resources are limited.	Handout: "Earthquake Has Struck!" page J-22
2. Inform the students that the simplest way to determine the nutritional adequacy of their daily food intake is to use the Four Food Groups. (If necessary, review the Four Food Groups, the number of servings per day recommended for a teenager, and which nutrients are important in each food group. Refer to the Food Group Guide, Appendix F, for information.) Ask the students to suggest the resources which, if limited, could affect the way we eat. List them on the chalkboard. Make sure the following resources are included, as they will be used as column headings later: Availability of Food, Money, Storage Space, and Time.	
3. Divide the students into groups of four or five. Distribute the work sheet "What to Choose?" and ask each group to answer the questions. Reconvene the class, and list the factors on the chalkboard under the headings Availability of Food, Money, Storage Space, and Time. (Suggested responses are listed in the Answer Key.)	Work Sheet: "What to Choose?" page J-23

Evaluation

Have the students complete the work sheet "Limited Food Resources" on page J-25. Determine the correctness of the answers and discuss them.

Food Service Involvement

Often, school food service personnel have been trained in the use of commodity foods to feed individuals during a disaster. Check with your district food service director. Invite one of the food service staff to speak to the class on this topic.

Notes

Answer Key

What to Choose (page J-23)

1. Limited availability
   a. Can I get a fruit or vegetable?
   b. Is a milk product available?
   c. Are there foods available from each of the Four Food Groups?
   d. What is fat content?
   e. What is salt content?
   f. What is the sugar content?
2. Limited money
   a. What is presently on hand at home?
   b. Will eating at home be cheaper than eating out?
   c. Can I afford foods from all Four Food Groups?
   d. What are the least expensive choices from the meat group?
   e. What are the least expensive choices from the other food groups?
   f. Are there any specials I can take advantage of?
3. Limited money
   a. Are there any items that can be eliminated from our usual food patterns and still maintain sufficient nutrition?
   b. In what ways can we cut down on costs and still get foods from all Four Food Groups?
   c. What are the least expensive choices from the meat group?
   d. What are the least expensive choices from the other food groups?
   e. Are there different preparation methods that could be used to cut costs?
   f. Can we take advantage of coupons and specials?
4. Limited storage space (and weight)
   a. How will milk and meat products normally refrigerated be replaced?
   b. What are small, lightweight choices from the meat group?
   c. What is the best form in which to carry fruits and vegetables?
   d. How will the extra calories needed for backpacking be provided in a small space?
   e. For how long a period of time will the supply last?
5. Limited time
   a. Where can I quickly find nutritious foods?
   b. How can advanced planning help?
   c. Should I try to include all Four Food Groups in this quick meal?
   d. What are some vending-machine-type foods that are nutritious?
   e. What is the fat, sugar, and salt content of convenience foods that I might buy?

Limited Food Resources (page J-25)

1. Answers will vary, but examples of good choices are as follows:

Cheese and crackers
Milk
Orange

Yogurt
Apple

Cheese and crackers
Milk
Apple

2. C is the correct answer. D is not as good a choice because the temperature of the lake may not be cold enough to keep the food safe; some food might become contaminated or waterlogged if stored in the lake; animals, such as raccoons, could get into the food; and there is no way to keep the food cold on the trip to the lake.
3. Two choices available are milk and chicken sandwich and the bean soup meal. Both contain servings from each of the Four Food Groups, are quickly put together, and are easy to eat.

Lesson 4. Physiological Processes Involved in Digestion, Absorption, and Metabolism of Food

An information acquisition lesson designed to help students identify the physiological processes involved in the digestion, absorption, and metabolism of food

Objective

After completing this lesson, the students should be able to name the parts of the body involved in digestion; the breakdown products of protein, carbohydrate, and fat digestion; the purpose and function of absorption and metabolism; and the relationship between digestion, absorption, metabolism, and food utilization in the body.

Key Facts

Digestion is the process by which food and the nutrients in foods are broken down into simple forms which can be used by body cells. For example, carbohydrates are broken down into glucose, fats are reduced to fatty acids, and proteins are broken down into amino acids. Glucose, fatty acids, and amino acids are simple forms of nutrients that the body cells can absorb and use for energy, growth, regulation of body functions, and repair and maintenance of body tissues.

Digestion takes place in a series of body parts known collectively as the alimentary or digestive tract. It begins in the mouth, where food is chewed by the teeth and carbohydrates are initially broken down by enzymes in the saliva. The next step in digestion occurs as food passes from the mouth to the stomach through the esophagus. At this time the food is mechanically broken down by the squeezing of the muscles of the throat in an action called peristalsis. The food next goes to the stomach, where further breakdown occurs from muscle action and the hydrochloric acid secretions of the stomach. How long food remains in the stomach varies from person to person and the diet consumed. However, food generally leaves the stomach in three to four and one-half hours. Food moves to the small intestine, where the carbohydrates are finally broken down into simple sugars (glucose, frutose, and galactose), and protein is broken down into amino acids. The breakdown of fats to fatty acids and glycerol also takes place in the small intestine. The simple forms of the nutrients are then absorbed into the blood system for transport to the individual cells. Material that has not been absorbed from the small intestine goes to the large intestine, also called the colon. Water and some minerals are absorbed in the large intestine. Undigested residues and other waste materials are then eliminated from the body through the anus.

Digestion includes both mechanical and chemical processes. The mechanical processes include chewing and the peristaltic action of the esophagus, the stomach, and the small intestine. The chemical processes include the breakdown of carbohydrate by the salivary enzymes in the mouth; of protein by hydrochloric acid in the stomach; and of fat, protein, and carbohydrate by the enzymes in the small intestine.

Absorption takes place in the small intestine through the capillaries in the intestinal wall. Nutrients are then transported and distributed to the cells to be used for energy and building.

After the food is digested and absorbed, it is metabolized. Metabolism is the total of all the chemical changes that go on in living cells. Metabolism includes the chemical changes that occur when absorbed nutrients are used to replace substances that have broken down in the cell, to release energy for body functions, and to build new tissues. The metabolism of carbohydrate, fat, and protein takes place in the body's cells.

Further information about digestion, absorption, and metabolism, and factors which affect digestion can be found in the handouts "Digestion, Absorption, and Metabolism," page J-26, and "Factors Affecting Digestion," page J-28.

A review of the six nutrient groups, their functions, and food sources of these nutrients can be found in Appendix G.

Procedures	*Materials needed*
1. Hand out apple slices, orange slices, banana halves, or crackers to students. Invite all students to bite into the food. Explain that they have now begun the process of digestion, absorption, and metabolism. 2. Write the words digestion, absorption, and metabolism on the chalkboard. Ask the student to define the three terms.	Apple slices, orange slices, banana halves, or crackers

Procedures	Materials needed
a. *Digestion* is the process by which food and the nutrients in food are broken down into simple forms which can be used by the body cells.	
b. *Absorption* is the movement of the end products of digestion through the cells of the intestinal wall and into circulation.	
c. *Metabolism* is the process by which the cells convert nutrients from food into energy, new body tissues, and other vital compounds. It is the total of all the chemical changes that go on in living cells.	
Remind the students that it takes all three steps before the food they eat actually becomes a part of the body.	
3. Ask the students to think again about the morsel of food they have just eaten. What is happening to it? (It is being digested!)	
Explain that there are two types of digestion, *mechanical* and *chemical.* Mechanical digestion is the chewing and churning that occurs in breaking down food. Chemical digestion is the breakdown of food by enzymes and acids. Remind the students that enzymes are proteins produced by living organisms which are essential in the breakdown of food.	
Explain to the students that most of the foods we eat must be reduced to simpler substances before they can be used by the body. Most food, in its original form, could never be absorbed from the intestine into the blood stream. And even if that were possible, the cells would not make use of the food. Cells can only use simple substances in metabolism. Without digestion and absorption, the nutrients in the food we eat would not be available to us.	
Distribute the work sheet "Digestive System." Using the overhead transparency of the same drawing, point out and label each part and explain what it does. (Advise the students that this is an artist's conception of the main functions of the digestive system.) Refer to the handouts "Digestive System (Completed)" and "Digestion, Absorption, and Metabolism" as you complete the transparency.	Work Sheet and Transparency Master: "Digestive System," page J-29 Handout: "Digestive System (Completed)," page J-30 Handout: "Digestion, Absorption, and Metabolism," page J-26
4. Ask the students whether or not all foods are digested by the same part of the body. (No.) To look at the differences in digestion of the three major nutrients and to review absorption and metabolism, have the students complete the "Fate of Fat, Progress of Protein, and Conversion of Carbohydrate" work sheet.	Work Sheet: "Fate of Fat, Progress of Protein, and Conversion of Carbohydrate," page J-31
Distribute the handout "Digestion, Absorption, and Metabolism" with the handout "Digesting the Nutrients." Discuss the answers to the work sheet. Emphasize the purpose of digestion and absorption as they relate to the use of nutrients in the body.	Handout: "Digestion, Absorption, and Metabolism," page J-26 Handout: "Digesting the Nutrients," page J-33
5. Ask the students to complete the brief "Food Intake Questionnaire." When completed, point out that the questions they answered include many factors which affect digestion or, as in the case of activity, the effect of digestion on performance. Use the overhead transparency "Factors Affecting Digestion" to review the factors which affect digestion. The transparency may also be handed out for the students' reference.	Work Sheet: "Food Intake Questionnaire," page J-34 Transparency Master: "Factors Affecting Digestion," page J-28
As you review the transparency, ask the students to relate digestion factors to their lives, on the basis of their response to the questionnaire.	

Evaluation

Have the students complete the work sheet "Digestion," page J-35, and discuss their answers. Students should describe accurately the physiological processes of digestion, absorption, and metabolism and their relationship to food utilization in the body.

Notes

Answer Key

Fate of Fat, Progress of Protein, and Conversion of Carbohydrate (page J-31)

A. See "Digesting the Nutrients," page J-33.

B. 1. Because it is the simple forms of these nutrients which are used by the cells in the body for energy and building.

2. Carbohydrate—glucose
Protein—amino acids
Fat—fatty acids and glycerol

3. a. Protein
b. Protein, carbohydrate, and fat
c. Carbohydrate

4. The purpose of absorption is to move the end products of digestion through the intestinal wall to the cells to be used for energy and body building.

5. Small intestine: carbohydrate, fat, protein, vitamins, and minerals
Large intestine: water and some minerals

6. Nutrients are utilized in the cells.
Metabolism.
Metabolism includes the chemical changes that occur when absorbed nutrients are used to replace substances that have broken down in the cell, to release energy for body functions, and to build new body tissues.

Digestion (page J-35)

A. 1. d or b
2. b or d
3. g
4. a
5. f
6. c, e or h
7. c, e or h
8. c, e or h
9. i

B. 1. d
2. b
3. g
4. c
5. h
6. a
7. e or c
8. f

C. Mechanical digestion is the chewing and churning of food to break it down into smaller particles. Examples of mechanical digestion are chewing in the mouth and squeezing in the esophagus.

D. Chemical digestion requires enzymes.

E. 1. Mechanical digestion
   2. Small intestine
   3. Amino acids

F. 1. Mouth
   2. Small intestine
   3. Glucose

G. 1. Mechanical digestion
   2. Bile
   3. Small intestine
   4. Glycerol

H. 1. Small intestine, large intestine, and circulatory system
   2. Cells

I. Blood is used to transport absorbed nutrients to the cells.

J. Metabolism is the process of utilizing nutrients in the body processes. Digestion and absorption are important to metabolism because without them the nutrients in the food we eat would be unavailable to us. Most food, as we eat it, is not useful to our bodies, because it is in such a complex form. It is necessary for foods to be reduced to simpler substances so that they can be metabolized.

Lesson 5. Health: Effect of Food Habits and Activities

An information acquisition lesson designed to help students identify at least two ways that food habits interact with exercise, environment, work, and leisure activities to affect health

Objective

After completing this lesson, the students should be able to list two ways food habits interact with exercise, environment, work, and leisure activities to affect health and to analyze their own life-style, using these factors.

Key Facts

When considering the term *health,* it is not only physical health that is important, but also social and mental health. Health is affected by many factors which are all interrelated. The factors discussed in this lesson are eating habits, exercise, leisure activities, work activities, personal feelings, interpersonal relationships, and external environment. For further information, see the handout "Life-Style and Health" on page J-38.

Personal eating habits can have both short- and long-term effects on the health of an individual. An allergic reaction to foods is an example of an immediate effect. If an individual eats food which he or she is allergic to, an adverse reaction may occur within a few hours. Reactions from food allergies include hives, breathing problems, and digestive upsets.

Other eating habits that can have an immediate effect include overeating, which can result in discomfort because of a bloated or overall full feeling. Skipping a meal can cause a person to feel weak or exhausted.

Eating habits also have long-term implications for health. Prolonged overeating results in obesity. Inadequate intake of essential nutrients over an extended period of time can result in a nutritional deficiency condition, such as iron-deficiency anemia, which may cause a person to feel tired all the time. Severe nutritional deficiency diseases are very rare in the United States today, although they occur in other parts of the world. In the United States, more likely long-term effects of poor nutrition are suboptimal health status and low resistance to infection. In some people, poor nutrition over an extended period of time contributes to such conditions as heart disease, hypertension, and osteoporosis. Because these conditions take years to develop, they cannot be reversed by short-term changes in dietary practices. The diseases of middle and old age may be related to dietary practices established when the persons were children or teenagers.

Optimal nutrition in the years of adolescence and young adulthood is especially important for females because their bodies are preparing for childbearing. The health of both mother and baby is related to nutritional status at the onset of pregnancy as well as dietary practices during pregnancy. Iron needs are highest for women during the years they are menstruating.

An obese individual is one who weighs 20 percent or more than the normal weight for the individual's height. An individual who weighs more than 10 percent above the normal weight is overweight. Obesity carries with it increased risk of illness and death from heart disease, high blood pressure, stroke, kidney disease, gallstones, cirrhosis of the liver, and diabetes.

Activities

Procedures	*Materials needed*
1. Have the students complete "What Is Your Health?" Inform the students that life-style has an effect on health and that is the object of today's lesson. Ask the students to name which factors were most important to their health. Ask them if they noticed how a number of these factors work together to affect health.	Work Sheet: "What Is Your Health?" page J-40
2. Show the transparency "Healthy and Not Healthy." Ask the students, "How can you tell when you are healthy?" Record the students' responses. Ask the students, "How can you tell when you are unhealthy?" Examples of responses might include the following points:	Transparency Master: "Healthy and Not Healthy," page J-41

Healthy	*Not healthy*
Feel good	Tired
Plenty of energy	Bored
Physically fit	Sleeplessness
Ability to sleep	Negative attitude
Alert	Overweight/excesively thin

Procedures	*Materials needed*
3. Show the transparency of the World Health Organization's definition of health. Ask the students to think about the definition. In a discussion, point out that health is much more than being free from physical disease. Health is affected by an interaction of a number of factors, such as the following: a. Food habits b. Exercise c. Personal feelings/interpersonal relationships d. Environment e. Work f. Leisure In other words, your health depends on your entire life-style.	Transparency Master: "Health Definition," page J-42
4. Write OBESITY on the chalkboard. Ask the students if they are familiar with this word, and request a definition. If the students cannot provide a definition, complete a definition for them and write it on the chalkboard. (See Key Facts.)	
Obesity is one example of how food habits can affect health. It is not only food habits, however, that affect health, but a number of other factors. Show the film *Health and Life-Styles* which explores other factors affecting health.	Film: *Health and Life-Styles*, available on a free-loan basis from the Nutrition and Food Service Education Resource Center; telephone 707-557-1592
5. Distribute copies of "Life-Style and Health." Review and discuss with students.	Handout: "Life-Style and Health," page J-38
6. Distribute the work sheet "Lori's Story." Ask the students to read the story and answer the questions using the "Life-Style and Health" handout as a guide. Discuss the answers with the students. Point out that Lori's health problems are related to a number of factors and that these factors are closely interrelated. Being healthy or unhealthy is influenced by all components of one's life-style. Optional: Continue the discussion about anorexia nervosa, including information about incidence, therapies, effect on family and friends, and the related disorders, such as bulimia and obesity. This can be a research project for a group of students. They might want to interview doctors, nutritionists, dietitians, or psychologists about these problems. The library could provide background information.	Work Sheet: "Lori's Story," page J-43
7. Ask the students to interview a parent or adult using the "What Is Your Health?" work sheet they used previously. Discuss the students' findings, including the differences between their own responses and those of the person interviewed.	Work Sheet: "What Is Your Health?" page J-40

Evaluation

Distribute the work sheet "Health Style Quiz," page J-44. Have the students complete the work sheet and determine the correctness of their answers. Discuss.

Food Service Involvement

1. Have the students determine what effect the school cafeteria environment has on student eating behaviors.
2. Have the students poll the student population for suggestions for improving the cafeteria environment. Discuss the results with the food service manager.

Notes

Answer Key

Lori's Story (page J-43)

1. Food habits:
   - Poor appearance
   - Malnutrition
   - Fatigue
   - Anemia
   - Many endocrine and metabolic disturbances

   Exercise:
   - Excessive calories used
   - Too much time spent exercising instead of other activities

   Leisure:
   - No leisure time
   - No stress release

   Work:
   - Mental stress
   - No leisure time

   Personal/interpersonal relationships:
   - Mental stress from:
     - Parental pressure
     - Self-imposed restrictions
     - Lack of self-confidence
     - Lack of peer support

   External environment:
   - None
2. Answers will vary.

Health-Style Quiz (page J-44)

1. Social and mental
2. Answers will vary; however, a sample answer would be:

   Eating habits—improved = better physical health (Helps maintain or lose weight; less time to snack on nonnutritious foods)

   Personal feelings—improved = better mental health (Feels better about self; accomplishes goals; relieves stress)
3. Answers will vary; however, a sample answer would be:

   Leisure time—limited, no time for relaxation = worse mental and physical health

   Eating habits—less time to eat and choose balanced meal = worse physical health
4. Answers will vary.

Lesson 6. Stress and Nutritional Needs

An information acquisition lesson designed to help students explain how stress influences nutritional needs

Objective

After completing this lesson, the students should be able to list three ways stress influences nutritional needs and name the nutrients affected.

Key Facts

This lesson requires knowledge of the Four Food Groups, the six nutrient groups, foods contained in the food and nutrient groups, and the functions of nutrients. Such information can be found in the Food Group Guide, Appendix F, and You and Nutrients, Appendix G. The material may be used as student handouts as well as for teacher information.

More information on stress and how it relates to nutritional needs is provided in the "Stress Information Sheet," page J-45.

Definitions needed for this lesson include the following:

1. *Nutrient*—A substance obtained from food and used in the body to promote growth, maintenance, or repair.
2. *Stress*—A physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation. A state resulting from bodily or mental tension resulting from factors that tend to alter an existent equilibrium.

Activities

Procedures	*Materials needed*
1. Ask the students to define stress. Write the students' responses on an overhead transparency or the chalkboard. (Sample responses from the students might be tension, pressure, nervousness, and "up-tight" feelings.) Ask the students to list the causes of stress. Have the students describe situations that cause stress in everyday life. (Sample student answers might be tests, improper diet, drugs, overweight, an operation, family problems, acne, and an injury.) Ask the students if happy situations can cause stress. (*Answer:* Yes. Sample student answers might be a wedding, the birth of a baby, graduation, and a new job.) Write down the definition of stress on the chalkboard or the overhead transparency: "Stress is a physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation." Explain to students that stress can arise from many things, such as infection, illness, surgery, burns, emotions, drugs, athletics, and pregnancy. Many other things cause stress, but these are some of the causes that will be covered in this lesson.	
2. Distribute the "Stress Information Sheet" and the work sheet "Stress." Allow time for the students to read the information sheet and complete the work sheet. Discuss the correct answers when the students have finished.	Handout: "Stress Information Sheet," page J-45 Work Sheet: "Stress," page J-50
3. Distribute the work sheet "Effects of Stress on Nutritive Needs." After the students have completed the work sheet, review the answers.	Work Sheet: "Effects of Stress on Nutritive Needs," page J-53

Procedures	Materials needed
4. Show the film *Health and Life-Styles.* This film describes ways to manage stress and how to take responsibility for your own health.	Film: *Health and Life-Styles,* available on a free-loan basis from the Nutrition and Food Service Education Resource Center, Vallejo City Unified School District, 321 Wallace Avenue, Vallejo, CA 94590; telephone 707-557-1592
5. Invite a guest speaker to class to discuss yoga, meditation, and other relaxation techniques.	
6. Have the students develop a questionnaire to survey other students about their eating habits while in stressful situations. Some stressful situations that might be included on the questionnaire are dieting, tests, social pressures, athletic competitions, illness, accidents or surgery, moving to a new town or school, moving to a new job, and family problems, such as divorce, family tensions, or family illness, and so on. Students can work individually or in pairs or groups.	

Evaluation

Distribute the work sheet "Stress and Nutritional Needs," page J-54. Evaluate and discuss student answers.

Notes

Answer Key

Stress (pages J-50 through J-52)

1. Illness can affect the body in two ways:
   a. It can affect the way the body uses nutrients obtained from food.
   b. It may interfere with a normal appetite, thereby diminishing nutrient intake.
2. A fever often accompanies an infection.
3. Water, sodium, potassium, and protein may need to be increased during an infection.
4. Diarrhea and vomiting may cause large losses of sodium and potassium.
5. A major concern in cases of vomiting and diarrhea is dehydration, which can be controlled by making sure the ill person takes in plenty of fluids.
6. A diet with increased protein, vitamins, and minerals needs to be given to improve a patient's ability to withstand and recover from the stress of surgery.
7. Patients with excessive burns have nutritional problems because of loss of fluids, electrolytes (minerals), and serum proteins from the burned areas.
8. A diet high in protein, calories, vitamins (particularly vitamin C and the B complex vitamins), and minerals should be given to patients with excessive burns. If necessary, vitamin and mineral supplements may need to be given.
9. Taking the following drugs can affect the nutrients of the body in the following ways:
   a. *Aspirin:* Irritates the intestine and causes bleeding, vitamin C deficiency, and anemia.
   b. *Laxatives:* Interfere with the body's absorption of the minerals, magnesium, and phosphorus, while promoting excessive calcium absorption.
   c. Excessive use of *antacids* can lead to bone loss due to decreased amounts of magnesium and phosphorus and can lead to calcium deposits in the soft tissues due to excessive absorption of calcium.
   d. *Alcohol:* Interferes with the absorption of most nutrients, increasing the need for vitamin B_{12}, folic acid, thiamin, and magnesium. It also decreases the appetite so that nutrient intake is decreased.
   e. *Birth control pills:* Increases the need for a number of vitamins and minerals, especially the B vitamins, particularly folic acid and vitamin B_6.
   f. *Nutrient supplements:* Causes toxic reactions to high doses of vitamins A and D, while high levels of vitamin C can cause kidney stones and stomach irritation.

10. Athletes do not have to use excessive supplements in their diets because a diet based on the Four Food Groups will meet all nutritional requirements of an athlete except for increased calorie needs, which can be met by increasing the number or size of servings from the Four Food Groups.
11. Five benefits a woman can obtain from eating the correct foods during and after her pregnancy are as follows:
    a. Fewer problems during pregnancy
    b. Fewer problems during childbirth
    c. Quicker recovery time
    d. Enough milk to nurse her baby
    e. Less chance of having a malformed or mentally deficient baby
12. A pregnant woman needs the following servings daily from the Four Food Groups:
    a. Bread and Cereal Group—Four or more servings
    b. Fruit and Vegetable Group—Five or more servings with a source of vitamin C and vitamin A every day
    c. Meat, Poultry, Fish, and Beans Group—Three or more servings
    d. Milk and Cheese Group—Four to five servings

Effects of Stress on Nutritive Needs (page J-53)

1. B
2. C
3. A
4. G
5. E
6. D
7. F
8. H

Stress and Nutritional Needs (pages J-54 and J-55)

A. Answers to questions on stress and nutritional needs.

1. Jack will need a diet with increased protein, vitamins, and minerals to help him recover from major surgery. Surgery increases the need for protein necessary for new tissue formation to heal the incision and the need for vitamins and minerals to help in wound healing, to replace iron lost in blood loss, and to help with protein utilization.
2. During an infection there is often a loss of appetite, resulting in a decreased intake of nutrients. There may be a tendency to consume a diet consisting mainly of liquids, which may exclude foods that provide protein and other essential nutrients. A fever may accompany infection and can cause an increased metabolic rate, which requires an increase in calories to maintain normal weight levels. Heavy sweating during a fever can cause a loss of nutrients, especially water, sodium, and potassium.
3. With severe burns, Janet will have a loss of electrolytes (minerals—sodium, chlorine, and potassium), serum proteins (with resulting nitrogen loss), and fluid losses. It is important for Janet to have a diet high in fluids, protein, vitamins, and minerals, as well as calories. Her body needs to build new tissue to replace that lost when she was burned.
4. Excessive use of aspirin can cause James to have stomach and intestinal irritation. This can lead to intestinal and/or stomach bleeding and increase the need for vitamin C, iron, and folic acid.
5. John's excessive use of alcoholic beverages interferes with the absorption of nutrients and increases the need for several nutrients, especially vitamin B_{12}, folic acid, thiamin, and magnesium. Also, since alcohol provides calories, John may not have an appetite. He will not eat and, thus, will have a decreased intake of nutrients.
6. Alice's diet needs to include increased servings from all Four Food Groups to allow her to meet her increased nutrient needs for protein, calcium, other minerals, vitamins, and carbohydrates, as well as increased caloric needs to provide for the increased growth demands of her body and those of the forming baby. She needs to pay particular attention to folic acid and iron and may need to take supplements of these nutrients.

B. Three ways emotional stress can influence nutritional needs.

Emotional stress can alter normal eating habits. It may include an increase in the intake of food, a decrease in the intake of food, or a change in the type of food eaten, such as an increase in snack food.

Lesson 7. Planning a Diet to Achieve or Maintain Ideal Weight

An information acquisition lesson designed to help students plan a nutritionally adequate diet that will result in a person's achieving or maintaining a desired weight

Objective

After completing this lesson, the students should be able to plan a nutritionally adequate diet that will result in a person's achieving or maintaining a desired weight.

Key Facts

A nutritionally adequate diet is one that meets a person's total nutrient needs. The diet should contribute to the formation of good food habits that will last a lifetime. Such a diet should contain a variety of foods that provide a combination of essential nutrients, should be consumed at regular intervals during the day to coincide with the body's need for nutrients, should help the person maintain weight at a safe level, and should be appetizing and enjoyable.

To determine the body's caloric needs, one must combine both basal metabolic needs and physical activity needs. Basal metabolic rate (BMR) is the amount of energy required by the body in a state of complete rest to maintain involuntary life processes, such as respiration, heartbeat, circulation, and body temperature. The formula to calculate BMR is included in the "Energy Needs" work sheet, page J-56.

One pound of fat equals 3,500 calories. An extra 500 calories per day for one week will cause a weight gain of one pound, while 500 fewer calories per day for one week will cause a weight loss of one pound per week.

The Food Group Guide has been developed as a general guideline to plan an adequate diet. By adding information about calorie content, this plan can be used as the basis for an individualized diet plan. It is important to emphasize that a variety of foods should be eaten from each group.

The Dietary Guidelines for Americans were developed jointly by nutritionists in the U.S. Departments of Agriculture and Health and Human Services. The guidelines were based on what is known today about the relationship of diet to good health and were developed to help Americans make informed choices about food. Refer to the Dietary Guidelines for Americans, Appendix E, for more information about this topic.

The unit of measurement for energy in the science of nutrition is the Calorie (upper case c), also known as the kilocalorie or kcal. One Calorie (upper case c) is the amount of heat needed to raise the temperature of 1 kilogram of water 1° Celsius. One calorie (lower case c) is the amount of heat needed to raise the temperature of 1 gram of water 1° Celsius. The calorie (lower case c), which is commonly used to refer to food and work energy, is actually a Calorie (kilocalorie or kcal). In this curriculum, calorie is used synonymously with Calorie. You may wish to alert your students of the actual difference between the two and to inform them that the trend is now to call Calories kcals (pronounced kay-cals).

Activities

Procedures	*Materials needed*
1. Ask the students if they have ever been on a weight loss diet. List the various diets. Have the students indicate whether they thought the diets were nutritionally adequate or not. What made them think so or not? Were the diets successful?	
Explain that during this lesson they will learn about planning a nutritionally adequate diet, which will also result in their achieving or maintaining ideal weight.	
2. Ask the students if they know their ideal weight. Distribute the "Ideal Height and Weight Chart." Distribute the "Personal Diet Plan" and have the students record their ideal weight.	Chart: "Ideal Height and Weight Chart," page J-57
Next, ask the students to estimate how many calories they need per day. Have them record this information on the "Personal Diet Plan." Explain that this number will actually be calculated after investigating what goes into determining the individual caloric requirements.	Work Sheet: "Personal Diet Plan," page J-58

Procedures	*Materials needed*
Review with the students the body's energy needs. In general, the total energy needs are based on two requirements—basal metabolic needs and other activity needs. a. Basal Metabolic Rate (BMR): The amount of energy required by the body, in a state of complete rest, to maintain involuntary life processes, such as respiration, heartbeat, circulation, and body temperature. The BMR for males is approximately 1,600—1,900 calories per day; for women, it is approximately 1,200—1,500 calories per day. b. Other Activity Needs (1) Sedentary activity: Add 50 percent of BMR. (2) Light activity: Add 60 percent of BMR. (3) Moderate activity: Add 70 percent of BMR. (4) Heavy activity: Add 100 percent of BMR.	
Distribute the "Energy Needs" work sheet. Have the students determine their caloric needs while you, the teacher, use the "Energy Needs" transparency to work step by step through the sample.	Work Sheet: "Energy Needs," page J-56 Transparency Master: "Energy Needs," page J-56
Have the students record their actual caloric needs on their "Personal Diet Plan." Have the students compare the calculated caloric needs to the number of calories they estimated at the beginning of the lesson.	
3. Ask the students to compare their ideal weight to their current weight. Students should decide whether they need to gain, lose, or maintain weight. Explain to the students that one pound of fat equals 3,500 calories. An extra 500 calories added to the diet per day for one week will result in one pound gained. Conversely, 500 fewer calories per day for one week will result in one pound lost.	
Each student should adjust his or her caloric intake according to his or her personal needs. If the students need to lose weight, they should subtract either 500 or 1,000 calories per day to lose one or two pounds per week. Emphasize that weight loss should be no more than two pounds per week. The opposite should occur to gain weight. Students interested in weight maintenance should not change their caloric intake (however, they may want to change the quality of their diet). Have the students complete the adjusted caloric needs on the "Personal Diet Plan" work sheet.	
4. Ask the students to recall the Four Food Groups. List these groups on the chalkboard. Ask the students to indicate how many servings from each group a teenager should eat every day (Vegetable and Fruit—4; Bread and Cereal—4; Milk and Cheese—4; Meat, Poultry, Fish and Beans—2). Remind the students that these recommendations are made to help plan a nutritionally adequate diet.	
Another set of recommendations to use in planning an adequate diet is the Dietary Guidelines for Americans. Using the transparency of the "Guide to Good Eating for Health and Fitness," review the guidelines with the students. Use Dietary Guidelines for Americans, Appendix E, as a reference, which also may be distributed to students. (Students have items 1—6 listed on their "Personal Diet Plan" work sheet.)	Transparency Master: "Guide to Good Eating for Health and Fitness," page J-59 Dietary Guidelines for Americans, Appendix E
Explain to the students that by using the Dietary Guidelines for Americans and the Four Food Groups, they can develop a person-	

Procedures	*Materials needed*
ally tailored diet plan that will also be nutritionally adequate to either gain, lose, or maintain weight.	
Tell the students that if they eat the recommended number of servings from the food groups, they will be getting about 1,300 calories. Ask them to compare that figure to their adjusted caloric needs. In most cases this level will be low.	
Distribute the "Calorie Additions" handout. There are many types of foods listed, but the best ways to increase calories is to add items from the Fruit and Vegetable and Bread and Cereal groups. Items from the Milk and Cheese Group and Meat, Poultry, Fish, and Beans Group can be added as long as those foods high in fat are limited.	Handout: "Calorie Additions," page J-60
Involve the students in a class activity. Use the "Daily Diet Plan" transparency (or make copies for each student), and ask class members to suggest ways both Pam and Dan can add to the minimum basic four servings to meet their caloric requirements, keeping the Dietary Guidelines for Americans in mind. If the students suggest high fat, high sugar foods, remind them that while these foods provide extra calories and nutrients, they may not be the best choices. Note the suggestions listed for Pam and Dan:	Transparency Master: "Daily Diet Plan," page J-61
Suggestions for Pam: 2 extra servings of fruit — 80 1 tablespoon margarine — 100 2 extra slices of bread — 160 1 extra cup of vegetables — 50 Total — 390 extra calories	
Suggestions for Dan: 3 extra slices of bread — 240 1 extra serving of cereal — 80 2 extra glasses of low-fat milk — 250 2 tablespoons of margarine — 200 2 tablespoons of oil, mayonnaise or salad dressing — 200 2 extra servings of fruit — 80 2 extra ounces of meat — 120 1 extra serving of vegetables — 25 Total — 1,195 extra calories	
Students may be surprised at the large number of servings to be added. Point out that in many cases suggested serving sizes may be small compared to the serving sizes they are used to. If food models are available, show the students ½ cup of cooked cereal, 2 ounces of meat, 1 small apple, and so on. Or, if possible, demonstrate with actual foods.	
5. Have the students complete their own daily diet plan on the bottom of their "Personal Diet Plan" work sheet. Ask for a student to share his or her meal pattern, and list it on the chalkboard. Ask the class to help plan a menu for a day based on this pattern, referring to the Food Group Guide. The number of servings from the Fruit and Vegetable and Bread and Cereal groups will probably be large; encourage students to be creative in the use of these foods.	Work Sheet: "Personal Diet Plan," page J-58 Food Group Guide, Appendix F

Procedures	Materials needed
6. Collect copies of diets from popular magazines. Divide students into groups of four or five persons. Distribute magazine diets. Help the students become familiar with the way these diets are merchandised. Have the students merchandise their Four Food Group Diet, showing that it can be used by anyone or it can be individualized so that everyone has a personalized plan. Students should choose a name for the diet and explain why it works, why someone would like it, and how it works (include the diet and menus for three days). Have the students lay out the article as if it were going to be used in a magazine. An alternative activity would be to have the students review the sample magazine diets for (a) adequacy for a teenage individual; (b) adherence to dietary guidelines; and (c) the potential success of the diet. Have each group write a short report on each of these topics.	Diets from magazines

Evaluation

Distribute the work sheet "Calorie Quiz," page J-62. The students may use any materials they have received for this lesson to answer the questions. Correct the work sheets and discuss the answers with the students.

Food Service Involvement

Ask the food service manager or director to provide school lunch menus so that the students can evaluate them for the approximate number of calories they provide. (Students may use the Nutrient Composition Table, Appendix C, as a reference.) Have the students adjust the menus, while still maintaining school food program requirements, to increase and decrease the caloric contribution.

Have the students work with the food service department to develop menus that meet the school food program requirements and are low in calories. Set up a low-caloric or "weight-watchers" food line in the cafeteria.

Notes

Answer Key

Calorie Quiz (page J-62)

1. 1,700 calories per day
2. 105 pounds, maintain, no
3. No. She needs to add 400 calories per day; she could add foods from the Bread and Cereal and/or Fruit and Vegetable groups since these groups contain foods which are consistent with the Dietary Guidelines for Americans, lower in fat, lower in salt, and higher in fiber.

Lesson 8. Vegetarianism

An information acquisition lesson designed to help students identify one way in which a vegetarian can obtain a nutritionally balanced diet

Objective

After completing this lesson, the students should be able to plan a nutritionally balanced vegetarian diet.

Key Facts

Protein is a nutrient found in all living matter. It is different from the nutrients fat and carbohydrate because it contains the element nitrogen. Proteins are composed of amino acids that are linked together into protein chains.

Of the more than 20 different amino acids, nine are called essential amino acids (EAAs) because they cannot be synthesized in the human body. These nine EAAs must be supplied to the body in adequate amounts from food sources. The remaining nonessential amino acids can be synthesized in the body. The nine EAAs are tryptophan, leucine, lysine, isoleucine, valine, threonine, methionine, phenylalanine, and histidine.

High-quality proteins contain all the EAAs in the amounts needed for human tissue formation and maintenance of bodily functions. High-quality proteins are normally found in meat, fish, poultry, eggs, and dairy products. Low-quality proteins that contain limited amounts of one or more of the amino acids are normally found in vegetables, grains (cereal, flour), seeds, nuts, and legumes (beans, peas). However, if these low-quality proteins are combined and consumed in the proper proportions, they will complement each other, and together, they will form high-quality proteins. Refer to Lesson 5 in *Choose Well, Be Well: A Curriculum Guide for Junior High School* for further information regarding complementary proteins.

The terms *complete* and *incomplete* are sometimes used in referring to proteins of high and low quality, but a protein is almost never totally lacking in one of the essential amino acids. Most proteins are not incomplete.

A vegetarian diet is usually one that is described as meatless. Vegans are persons who select a diet that includes only foods from plant sources and excludes all animal flesh and animal products. A lacto-ovo vegetarian diet excludes animal flesh but includes animal products such as eggs, milk, and cheese. "Ovo" refers to eggs, and "lacto" refers to milk and milk products.

A person who eats a vegetarian diet can be well nourished if he or she eats a variety of plant foods and pays attention to certain critical nutrients. (The person following a lacto-ovo vegetarian diet has a nutritional advantage.) Dark green, leafy vegetables are sources of important nutrients such as calcium and iron. When exposure to sunlight is limited, children may receive inadequate amounts of vitamin D unless it is provided in milk or a supplement. Vitamin B_{12} is not supplied when foods of animal origin are eliminated from the diet, and a vitamin B_{12} supplement may be necessary to meet the requirement for this vitamin. Without foods of animal origin in the diet, it may be difficult to get a sufficient amount of the mineral zinc as well.

People choose a vegetarian diet for many reasons, including religious beliefs, economics, political views, health concerns, personal philosophy, humanitarian motives, peer pressure, or acceptance of a popular movement.

Activities

Procedures	*Materials needed*
1. Ask the students to think about the following questions: a. Can you describe what you think a vegetarian looks like? b. What is a vegetarian meal? c. Do you know a person who is a vegetarian? Discuss the students' answers. Explain that a vegetarian is a person who is concerned about his or her dietary pattern and has chosen to exclude certain foods from his or her diet. Vegetarianism is one acceptable alternative life-style. Two kinds of vegetarians are a strict vegetarian (vegan) who eats no animal flesh or animal products, and	

Procedures	*Materials needed*
a lacto-ovo vegetarian who eliminates meat from his or her diet but does include animal products such as milk, cheese, and eggs.	
Distribute the work sheet "Vegetarian by Choice." Acceptable student answers would include the following: a. Economic: Cost of meat per pound and cost of land b. Religious: Oriental religions, Seventh-Day Adventists, Indian religions, and other groups c. Ecological: Use of land and conservation of energy d. Moral: Humanitarianism, taking of life, eating flesh, exploitation of animals, world hunger e. Political: Social conscience, form of protest or family rebellion f. Faddism: Acceptance of a popular movement List additional reasons for a choice of this life-style that students have not included.	Work Sheet: "Vegetarian by Choice." page J-63
2. Explain to the students that as they study the vegetarian diet, there are many new terms with which they will need to become familiar. Distribute the work sheet "Vegetarian Vocabulary." Options for the teacher: a. Include definitions on the handout and ask students to read them. Discuss. b. Use an overhead transparency of the list of words and write in definitions as students record. Discuss the definitions. c. Have the students research the words and complete the work sheet. Discuss the definitions. (Note to the teacher: The definitions of terms given are not necessarily found in a dictionary.)	Work Sheet: "Vegetarian Vocabulary," page J-64 Answer Key: "Vegetarian Vocabulary," page J-65
3. Discuss with the students the fact that the protein we eat comes from either animal protein or plant protein. Protein is essential to our diet, but even more important are the amino acids found in the protein. There are nine essential amino acids the body cannot make and must get from an outside protein source. Vegetarians who exclude both animal flesh and animal products must exercise great care in planning their menus, while lacto-ovo vegetarians can obtain these essential amino acids with some menu adaptations. An awareness of protein sources is needed to be able to plan a nutritionally adequate diet. This awareness is especially important for the vegetarian. Distribute the work sheet "Know Your Protein Sources." Discuss the correct answers.	Work Sheet: "Know Your Protein Sources," page J-66
4. Have the students read the handout "What Is a Vegetarian Diet?" Hand out the work sheet "Vegetarian Comparison." Discuss the correct answers.	Handout: "What Is a Vegetarian Diet?" page J-67 Work Sheet: "Vegetarian Comparison," page J-69
5. Ask two or three students to suggest a typical evening meal for a vegan. Write sample meals on the chalkboard in menu style. (Students may want to copy these meals in their notebooks as samples.) Ask two or three students from the class to suggest a sample evening meal a lacto-ovo vegetarian might prepare.	

Procedures	*Materials needed*
Write students' suggestions for lacto-ovo vegetarian meals on the chalkboard. (Students may want to copy these meals in their notebooks as samples.)	
Discuss several advantages and disadvantages of each diet they have suggested.	
6. Give each student a copy of the "Vegetarian Menu."	Work Sheet: "Vegetarian Menu," page J-70
Make an overhead transparency of the "Vegetarian Menu" and "Examples of Responses," and review the advantages and disadvantages of the two diets with the class.	Transparency Master: "Examples of Responses to Vegetarian Menu," page J-71
7. Optional activities or extra credit:	Work Sheet: "Menu Planning," page J-72
Distribute the "Menu Planning" work sheet. Ask the students to complete the activities on the work sheet. Refer to the "Sample One-Day Menu," if desired.	Handout: "Sample One-Day Menu," page J-73
Discuss student menus and student reactions to the assignment.	
8. Distribute "Create Your Own Menu" work sheet. Ask the students to complete. Discuss the completed projects.	Work Sheet: "Create Your Own Menu," page J-74 Sample restaurant menus Vegetarian recipes and cookbooks
9. Prepare vegetarian meals in class.	

Evaluation

1. Describe the following situation to the students:

   "You have a friend who is considering changing his or her eating patterns from a diet of meat and potatoes to a lacto-ovo vegetarian diet. He or she asks your advice."
2. Tell the students to do the following:
   a. Briefly describe the advantages of a lacto-ovo vegetarian diet as compared to a strict vegetarian diet.
   b. Prepare one day of nutritionally balanced menus (for both a lacto-ovo and a strict vegetarian) for a friend.
   c. Describe the steps a person might use to switch from the diet, including meat to the vegetarian diet.

Food Service Involvement

1. Have the students review lunch menus for possible vegetarian meals. Invite the food service staff to a class discussion on how a vegetarian student can participate in the school lunch program.
2. Ask the students to complete the "Vegetarian Lunches" work sheet, page J-75, coordinating with the food service staff. If desired, suggest that some of these lunches be served in the future.

Notes

Answer Key

Know Your Protein Sources (page J-66)

1. Hamburger patty, animal
2. Cheese, animal
3. Whole wheat bread, plant
4. Soybeans, plant
5. Tomato soup, plant
6. Milk, animal
7. Rice, plant
8. Baked beans, plant
9. Baked potato, plant
10. Eggs, animal

Vegetarian Comparison (page J-69)

A. 1. Vegan: A person who does not eat animal flesh or animal products.
   2. Lacto-ovo vegetarian: A person who does not eat animal flesh, but does include eggs, cheese, and milk in his or her diet.

B. *Similarities*

1. Includes plant proteins, fruits, vegetables, legumes, nuts, and grains.
2. Concerned with combining protein-rich foods to provide a nutritionally adequate diet.

Differences

1. Strict vegetarian: Excludes animal flesh and animal products.
2. Lacto-ovo vegetarian: Excludes only animal flesh.

Evaluation (page 34)

2a. Suggested responses include:

It is easier to consume a nutritionally adequate diet; without careful planning, the strict vegetarian diet may have deficiencies in calcium, iron, zinc, vitamin B_{12}, and riboflavin.

It is easier to eat outside the home when eggs and dairy products are included in the diet.

The change from nonvegetarian to vegetarian is not as drastic and may be easier to accomplish.

2b. See "Sample One-Day Menu," page J-73.

2c. Suggested steps might include:

1. Begin by reading reputable literature about vegetarianism.
2. Begin experimenting with alternative protein sources.
3. Use smaller portions of meat in meals.
4. Eliminate meat from one meal or one day at a time, and replace it with other nonmeat protein sources.
5. Add whole grains to the diet.
6. Choose meatless meals when eating out.
7. Eliminate meat entirely.

Lesson 9. Feelings About Foods

An open-ended discussion lesson through which students have an opportunity to share ideas, opinions, and feelings about food choices

Activities

Procedures	*Materials needed*
1. Inform the students that the purpose of this lesson is to give them a chance to express how they feel about food.	
2. Distribute the "Forced Choices" grid to the students, and draw a similar grid on the chalkboard for demonstration purposes.	Grid: "Forced Choices," page J-76
3. Explain to the students that you are going to ask them several questions about how strongly they feel about food choices. It will be their task to rank each question on the grid by placing a provided key word in each of the 16 spaces.	
4. Discuss with the students the ranking of the questions. The numbers 1, 2, and 3 mean that they really like or dislike the item. The numbers 14, 15, and 16 mean that they really do not care one way or the other about the question. Demonstrate this ranking procedure on the chalkboard grid by giving some personal examples. (The students' understanding of this polarity is essential before proceeding with the activity.) 5. Tell the students that you will give them the questions and key words one at a time, so it will be necessary for them to reevaluate their ranking each time. This procedure will probably require that they cross out a word and place it in another space several times. Demonstrate the procedure on the chalkboard grid and emphasize that the activity will not be evaluated on neatness. 6. Select 16 of the questions under "How Strongly Do You Feel About . . . ?" Proceed to read each of the questions one at a time. Write the key word in the sentence on the chalkboard and instruct the students to place it on their "Forced Choices" grid, according to the strength of their feeling. Allow them adequate time to decide where each word should go and to place it on their grid. Demonstrate the first two or three words on the chalkboard grid. Remind the students throughout the activity that they are to rank each according to how strong their feeling is from "strong like" or "strong dislike" (1) to little or no feeling (16). 7. When all of the questions have been presented, allow the students time to reevaluate all 16 items and make any last changes in their rankings.	How Strongly Do You Feel About: . . . Food with little or no *nutritional value?* . . . A *vegetarian* diet? . . . "*Junk*" food served at school? . . . Eating *between meals?* . . . *T.V. dinners?* . . . "*Crash" diets* to lose weight? . . . *Spicy food?* . . . The foods served by the *school cafeteria?* . . . *Skipping lunch* to study for a test? . . . Eating at a *fast food restaurant?* . . . *Oriental food?* . . . *Mexican food?* . . . *Italian food?* . . . *Dessert* after dinner? . . . *Hot drinks* with meals? . . . *Cold cereal* for breakfast? . . . *Raw vegetables?* . . . *Fried foods?* . . . *School lunch?* . . . Foods that are high in *calories?* . . . *Trying foods* that you have never eaten before? . . . Drinking four or more glasses of *milk* every day? . . . Planning meals to include the Four *Food Groups?* . . . *Liver* for dinner? . . . *Diet sodas?* . . . *Casseroles* for dinner? . . . *Left-overs* for dinner? . . . *Sugar substitutes?*

Procedures	*Materials needed*
8. Inform the students that you will ask them to form a group with two other persons in the class to compare rankings. Explain that, while working in a group, their task will be to (1) compare their grids and decide, as a group, what they feel are the three issues about which they have the strongest feelings (good or bad); (2) rank their selections 1, 2, and 3; and (3) place their choices on the transparency strips with the transparency markers (demonstrate). Have the students form their groups and get started on the assignment. Once the groups have been formed, distribute a transparency strip and marker to each group.	Transparency strips Markers
9. Following the completion of the group activity, reconvene the class and collect the transparency strips and display them on the overhead projector. Discuss with the class the similarities among the rankings, and select the issue for which you believe the students have the strongest and most diverse feelings. To formulate the discussion question, delete the word "strongly" and add to the end of the topic " . . . and tell why you feel that way?" (For instance, if the issue of "a vegetarian diet" was ranked high with strong feelings, the discussion question would be, "How do you feel about a vegetarian diet and tell us why you feel that way?")	
10. Explain to the students that they were able to show how they felt by ranking several issues individually and as a group and that they now will be given the opportunity to say how they feel about one issue.	
11. Present the discussion rules outlined in the Introduction, page 5.	
12. Restate the discussion question, "How do you feel about . . . and tell why you feel that way?"	
13. Conduct the discussion.	

Lesson 10. Food Values

A values awareness lesson designed to help students explore their values about food choices

Activities

Procedures	Materials needed
1. Inform the students that the purpose of this lesson is to help them become aware of some of their values about the foods they choose to eat.	
2. Tell the students they are to imagine that they are all members of the Backpacking Club. The club is in the planning stages of a week long backpacking trip into a wilderness area. (For added interest and motivation, you could add a few details concerning the hypothetical trip, such as a particular location, the elevation, type of terrain, and so on.) Explain that each aspect of the trip will be planned by a different committee. The committee to which they belong has been assigned the task of planning the kinds of foods to be taken on the trip.	
3. Explain that brainstorming a list of suggested foods is one way to decide what foods should be taken on the trip. However, make sure the students understand that the discussion should be open to all kinds of ideas and that the participants should be free to build on or modify ideas of other individuals. The discussion should not digress into evaluations of ideas or individuals or involve any rationale or explanations.	
4. Begin the brainstorming session by encouraging the students to respond with food items that they feel could be considered for the backpacking trip. Write each food response on the chalkboard under the heading "Foods for Consideration." If the completed list fails to include some obvious backpacking staples (beef jerky, dried fruit, nuts, and so on), you may wish to add them to the list. Also note that, while the process of brainstorming improves the chances of including the important items, the list will undoubtedly contain items that will be eliminated after discussion and evaluation.	
5. Following the brainstorming session, divide the class into groups of approximately five students each. While distributing the work sheet "People Backpacking Committee Report," have each group select a recorder and a spokesperson.	Work Sheet: "People Backpacking Committee Report," page J-77
6. Remind the students that their groups have been assigned the task of planning the food to be taken on the week long backpacking trip. They must choose which food items should be taken and submit their report to the entire club membership.	
7. Ask each group to consider and discuss the items their committee feels would be most desirable and appropriate to take on the trip. Indicate that the brainstorming list may be helpful in this task. However, they should recognize that many items on the list will be quickly eliminated and others that come to mind may be added. (Allow approximately three to five minutes for this initial stage of the discussion.)	
8. Remind the recorder of each group to begin listing on the work sheet the important food items to be taken on the trip as their group reaches a consensus. When the committee members agree that a particular food item should be recommended to the other club	

Procedures | *Materials needed*

members, the recorder should list it in the left-hand column of the "People Backpacking Committee Report." Demonstrate this on the chalkboard or a transparency and point out that the order of the list has no significance. Ask them to continue their discussion and list the items as instructed.

9. After the groups have completed listing their five food items, explain that in choosing those particular food items over others, they undoubtedly had some reasons for selecting them. Since the other club members may want to know their committee's reasons for selecting those food items for their trip, they will be asked to write those reasons for each selection in the right-hand column under the heading "Reasons for Choosing Food." Demonstrate this on the chalkboard or a transparency:

Important Food Items	*Reasons for Choosing Food*
1. Dried Fruit	Nutritional value Ease of preparation Light weight

Explain that the same reason may be used for more than one food item. Instruct each group to discuss the reasons for their choices and write them on their "People Backpacking Committee Report."

10. Ask the groups to share the reasons for their choices. As the students respond, write each reason on the chalkboard under the heading, "Reasons for Choosing Food." However, it may be necessary to first reword their comments in more precise and positive terms. (For example, you should change statements like "It is good for you" to "nutritional value," and "It will not spoil" to "preservation," and so on.)
11. Inform the students that the list of reasons on the chalkboard and their papers are really their values about those foods. On the chalkboard cross out the words "Reasons for" and write the words "Values about" in their place. Instruct the students to do the same on their papers.
12. Write the following sentence on the chalkboard: "Our committee chose to take_____________on our trip because one of our values about backpacking food is____________." Indicate to the students that this is the same statement found at the bottom of their work sheet. Inform each group that their next task will be to complete the two value statements as part of the food planning committee's formal report. In the first blank they are to insert one of the food items their committee chose and in the other an important value they have about it. Remind the students that their values are really the reasons they had for choosing that food. Illustrate this by reading the sentence and filling in the blanks.
13. Explain that each committee will now be called upon to give its food planning report before the members of the Backpacking Club (the class). The report will consist of the committee spokesperson's reading of the two values statements, when called upon. During the reports, direct the students to compare each reported food item and value to the others presented and to those listed on their work sheet. When similarities are noted, emphasize that we often select the same foods as other people because we hold the same values. When differences in selection of foods occur, it is usually because our values are different. If the difference indicated is in the values reported for the

Procedures	Materials needed
same food item, point out that often several values play a role in choosing foods, and different people may prioritize these values differently.	
14. Remind the students that each food planning committee chose certain foods for the backpacking trip because of particular reasons or values. Conclude the activity by noting that we, as individuals, make our food choices based on the values we hold about food.	
Values Application	
1. Introduce the follow-up activity to the students by commenting that they had made food choices earlier based on their group's food values for a particular situation (backpacking). For this activity they are going to consider their own personal values about food when selecting food at a fast food restaurant.	
2. Explain that some of their values about, or reasons for, choosing food for backpacking may not apply to their selection of food items at a fast food restaurant. Ask the students to suggest which reasons would not apply in this new situation, and erase them from the chalkboard. Have the students add to the remaining values or reasons any additional reasons why someone might select one food item over another from a fast food restaurant. Add each item to the list by writing it on the chalkboard. Again, it may be necessary to reword some of the responses into more precise and positive terms. (The additions may include such reasons as the cost, the time of day, a friend's choice, caloric content, and so on.)	
3. Inform the students that the Saturday morning planning session of the Backpacking Club has lasted longer than expected, and everyone has decided to have lunch together at a local fast food place.	
4. Distribute the work sheet "Values About Choosing Foods." If possible, provide the students with menus from the chosen restaurant. (Many fast food restaurants have some give-away menus that can be used for this purpose.) Give the students a cost limit, and have them list the foods they would like to eat for a lunch.	Work Sheet: "Values About Choosing Foods," page J-78 Fast food restaurant menus
5. Have the students write down the values they used in selecting the foods for their lunch. Indicate that they may want to refer to the list of values on the chalkboard, but that they should feel free to add a value to the list if they wish to do so. Then, instruct them to complete the value statement for one of their values.	
6. Invite the students who are willing to do so to share their values about selecting food at a fast food restaurant, using their value statements on the bottom of the work sheet.	
7. After giving the students an opportunity to share their values about choosing food at a fast food restaurant, you may want to reinforce the concepts that (1) different people may choose the same food for different reasons; and (2) different people may choose different foods based on the same values.	

Lesson 11. Social Conditions That Influence Eating Behavior

An information acquisition lesson designed to help students identify how social conditions influence eating behavior

Objective

After completing this lesson, the students should be able to identify how the family and peers influence eating behavior.

Key Facts

A person's food habits are determined by a number of factors. Initially, a child's food choice is controlled by the family. The family's cultural background, socioeconomic status, parental food preferences, convenience, level of knowledge, and general awareness of good nutrition and the types of food available influence a family's diet.

Later, when peers influence children and adolescents in the development of their values, peer pressure becomes a major determinant of food choice. These forces may result in a nutritionally inadequate diet or the consumption of foods which otherwise would not be chosen. A good example is the culturally dictated notion of "good manners" or not offending the host or hostess by refusing food when you really do not desire any. Another example of social pressure is going to a fast food restaurant after a football game so that you might be accepted by your peers. Many social activities also center on food, such as holiday parties, potluck dinners, birthday parties, and so on.

Activities

Procedures	*Materials needed*
1. Distribute the "Opinionnaire on Food" to the students. Ask the students, "What do these statements have in common?" (*Answer:* They all talk about influences on eating behavior.) You may want to spend some time discussing the statements and the opinions expressed by the students.	Work Sheet: "Opinionnaire on Food," page J-79
2. Ask the students if they have ever eaten a food they did not like because they wanted to be polite. Ask them if they have ever tried an unfamiliar food because it was served to them while they were dining at a friend's house. Ask them if they were surprised when these unfamiliar foods tasted good.	
3. Ask each student to think of four foods that he or she dislikes. Distribute the work sheet "Eating in Social Situations." Have the students fill in the four blank spaces with the names of different foods they dislike. Ask them to complete the work sheet. Discuss the students' answers.	Work Sheet: "Eating in Social Situations," page J-80
4. Explain to the students that there are many different ways in which social conditions can influence eating behavior. For example: a. Tell them about Jack, who eats the dinner his little brother prepares even though everything is overcooked. (His brother is just learning how to cook.) What social conditions are at work here? (*Answer:* Being polite and not wanting to hurt another person's feelings.) b. Tell the students about Bill, who really wants to eat the spinach included in his school lunch. However, he does not because his friends always make rude comments about the way spinach tastes. What social conditions affect Bill's decision? (*Answer:* Peer pressure and wanting to be one of the crowd.)	

Procedures	Materials needed
c. Ask the students what social conditions affect the fact that Frank served his boss steak when Frank would rather eat chicken. What social conditions are at work here? (*Answer:* Serving status foods to impress someone.)	
d. Ask the students what social factors influence the person who is so nervous or excited about an event, such as before giving a speech in front of the class or before a big date, that he or she cannot eat. (*Answer:* Fear of failure that causes tension and suppression of the appetite.) Ask the students, "Does what we eat say something about us as people?" For example, tell them about Susan, who is out on a date with her boyfriend. She is really hungry, but she does not eat very much so that he will not think she overeats and is an expensive date. Remind the students that specific social occasions often influence the kinds of foods we eat. For example, wedding cakes are usually served at weddings along with punch and champagne; your family may celebrate certain occasions with traditional foods (Christmas, Chanukah, Thanksgiving, Easter, birthdays, and so on); certain religions forbid the consumption of specific foods on some occasions or all occasions.	
5. Ask the students to think about the way a family they know celebrates social events, such as religious holidays, birthdays, happy events, and so on. Ask them to think about the foods served at this event, such as turkey on Thanksgiving, a special kind of birthday cake for their birthday, and so forth. Ask each student to make a poster that shows the traditional foods that some families eat at special events. Distribute materials for making posters: paper, crayons, marking pens, magazines, tape, glue, and so on. Allow the students sufficient time to finish their posters. Display the posters around the room. Offer extra credit to those students who wish to write their traditional recipes on a ditto master to share with the class.	Poster materials
6. Distribute the "Food Diary" to students. Instruct the students to fill in the chart with everything they eat for a specified period of time: 1 day, 2 days, 3 days. Ask the students to complete their charts by listing the factors that influenced their eating behavior every time they ate food. (Some of these factors might include hunger, economics, time, availability, peer pressure, social pressure, being polite, status, and so on.) Ask the students to put a check mark by those factors which could be considered social, such as peer pressure, social pressure, status, tradition, and so on. Help the students complete their charts, if necessary. Ask the students if the factors which influenced their eating behavior were consistent from meal to meal. For example, did they always eat what their friends ate? Ask for student volunteers to share the information in their diaries with the class.	Work Sheet: "Food Diary," page J-81
7. Ask the students to create a school-life study on "How Social Conditions Influence Eating Habits." Students could conduct the survey in a number of ways: (a) a random sampling of a number of classes; (b) a survey of the whole student body during the first period; or (c) a survey of a cross section of the student body during lunch.	

Procedures	Materials needed

Have the students take the responsibility for writing the questionnaire, conducting the survey, and tabulating the results. Sample questions include the following:

a. What do you spend the bulk of your allowance or paycheck on?
   (1) Food
   (2) Clothes
   (3) Entertainment
b. When you get together with your friends, how do you spend your time?
c. If you went out to eat with your friends and they ordered cola drinks, fries, and hamburgers, and you wanted a salad, would you order what they ordered or what you wanted?

8. Ask the students to write a position paper on one of the following subjects:
   a. Eating Is Entertainment
   b. Food Choices Are Expressions of Ourselves
   c. Americans Get the Kind of Food They Want

   Have the students take a stand (agree or disagree) with the assigned essay topic. The paper should be no more than two pages in length and presented orally to the class.
9. Ask the students to write a paragraph based on the introductory phrase, "I eat when I am . . ."
10. Invite to class a speaker from Weight Watchers, a local diet center, or nutrition council to discuss the relationship between social pressures and eating habits. Invite the school nurse to address the issue of how students' dietary patterns affect health.
11. Have the students record every reference to food that they hear during one day (include television and radio ads and comments made by parents, friends, and teachers).

    Have the students respond to the question, "How do you think influences like these affect your values and life-style?"
12. Invite people from the community to talk about their "social-deviant" behavior with respect to their eating habits; examples include 7-Steps, Alcoholics Anonymous, and Aquarian Effort.

Evaluation

Distribute the work sheet "What's Happening Here?" page J-82. Evaluate student responses and discuss correct answers.

Food Service Involvement

1. Ask the food service manager or director to discuss with students how peer pressure influences menu selection in the school lunchroom.
2. Ask the students to think of ways of using positive peer pressure to encourge students to eat lunch in the cafeteria (posters, contests, information sheets).
3. Working with the food service manager or director, have the students use peer pressure positively to improve the school lunch selections.

Notes

Answer Key

What's Happening Here? (page J-82)

1. Social pressure
2. Peer pressure
3. Status pressure

Lesson 12. World Food Problems

An information acquisition lesson designed to help students identify major nutritional problems in other areas of the world and find possible solutions to the problems

Objective

After completing this lesson, the students should be able to list three major nutritional problems in other areas of the world, describe causes of these problems, and suggest possible solutions to the problems.

Key Facts

Hunger is a physiological and psychological state that results when immediate food needs are not met.

Undernutrition occurs when people do not get enough calories to maintain normal body weight and normal activity. The quantity and/or quality of food intake is restricted. Chronic undernutrition results in growth retardation and lack of vigor and increases susceptibility to infection and disease.

Malnutrition occurs when people get enough calories but insufficient amounts of needed nutrients, such as vitamins, minerals, and proteins or some of the essential amino acids in proteins. Malnutrition may result in specific diet-related diseases.

Major nutritional problems of the world include the following:

1. General undernutrition, which is caused by lack of food
2. Protein-calorie malnutrition, which is caused by both inadequate quantity and quality of food, especially for children
3. Anemia, which results from inadequate intakes of iron, protein, or certain vitamins (vitamin C, folacin, and vitamin B_{12})
4. Blindness and eye conditions due to the lack of vitamin A
5. Skin conditions due to riboflavin deficiency

Other nutrition deficiency conditions include beriberi (deficiency of thiamin), pellagra (deficiency of niacin), goiter (deficiency of iodine), scurvy (deficiency of vitamin C), and rickets (deficiency of vitamin D and/or calcium), which are found in certain regions of the world.

Marasmus is a disease of severe malnutrition resulting from starvation or a gross, chronic caloric deficiency. Visual signs include wasted limbs, emaciated body, and a shriveled face.

Kwashiorkor is a severe form of protein malnutrition of early childhood. It is characterized by edema (puffy legs and distended abdomen), "Moonface," coarsening of skin and change in pigmentation, and retarded growth and development.

Protein/calorie malnutrition occurs when both quantity and quality of foods are inadequate for normal growth and development.

Decline in breast feeding is a major cause of infant malnutrition.

The problem of providing sufficient food for all people is one that cannot be dealt with in isolation. It is a result of a complex of socioeconomic conditions. The factors/forces that are usually associated with the problem include the following:

1. Inadequate food production in developing countries (geography and farming methods)
2. Unequal distribution of food
3. Population growth
4. Affluent countries' use of resources for fertilizer production. (The disproportionate use of resources exerts pressure on world food supply. When grain is used for animal feed, less of it is available for export to hungry nations. Overconsumption of petroleum [gasoline] reduces the number of petroleum products on the market or makes petroleum too costly.)
5. Tradition, eating practices, and level of nutritional information of people in hungry parts of the world
6. Use of land in developing countries for export crops (more profitable to grow "cash crops" such as cocoa and flowers for export than to grow wheat, corn, or rice to feed the local people)
7. Poverty and economic level of people in developing nations

Global plans for dealing with nutrition problems due to food supply usually include the following:

1. Increase production of animal, fish, and plant sources of protein.
2. Include grains genetically improved in protein content.

3. Improve marketing and distribution of food supplies.
4. Control population.
5. Establish research and personnel training facilities.
6. Develop new sources of protein.
7. Help countries improve economic level so they can buy food they cannot grow.

A relationship exists between what people in affluent countries eat and what the rest of the world eats. The consumption of fewer nonnutritious cash crop products (coffee, tea, cocoa, and sugar cane [used for sugar and rum production]) can contribute toward a solution to hunger and malnutrition in the world by putting land into production for raising food crops.

New forms of protein include protein concentrate from oil seeds (soya, peanut, cotton, sesame, sunflower), textured vegetable protein, and fish protein concentrates.

Activities

Procedures	*Materials needed*
1. Before class, mark off a large circle on the classroom floor with masking tape. The circle should be large enough so that all class members can be arranged within it. Divide the circle into sections that represent the world land distribution: Africa—22 percent Asia—35 percent Europe—5 percent South America—15 percent North America—16 percent *Australia, Antarctica Islands—7 percent	Masking tape
Label or cut a large outline of each continent from different colored tag board or construction paper. Place the outline in respective sections of the circle. Have available a food item large enough to divide among the students (round or flat sourdough or sheepherders' bread). Cut name cards out of colored paper matching that of the continents. Make enough cards so that the students will be divided in proportion to the population in each continent: Africa 11 percent Asia 60 percent Europe 14 percent South America 9 percent North America 6 percent	Tag board or construction paper Bread
As the students enter the classroom, randomly hand out the colored name cards. Ask them to find the section on the floor diagram that matches their colored card and to stand in that section.	
After all of the students are in place, tell them that they represent the population of that country. Ask them to observe the numbers in each section.	
Next, ask one representative from each section (continent) to come forward. Cut the loaf of bread into pieces that are comparable to the per capita consumption of animal protein for each continent: Africa 10 percent Asia 5 percent Europe 25 percent South America 15 percent North America 45 percent	

*Will not be used in rest of lesson.

Procedures	*Materials needed*
Give the representatives from each continent their proportion. Ask them to go back to their group and divide the bread among themselves. Ask the students the following questions: a. What do you see as you look around the circle? b. Are the groups evenly divided? c. Which group has more to eat? What sections of the world do they represent? d. What countries are in these sections of the world?	
e. On a map or globe identify the location of these countries. Draw the students' attention to their geographical locations. f. Ask the students with the least amount of bread, "What do you think about this situation of few people having the most food?" Then ask them, "What do you think the people you represent are like? What would the children be like?"	Map or globe
2. Before class begins, cut five to eight pieces of butcher paper into large sections. Place the paper and colored marking pens around the classroom in different locations (floor, tacked to bulletin boards, table or desk tops, and so on). On each sheet write a projective statement, such as: a. Hunger is . . . b. People in other countries may be hungry because . . . c. When I picture a hungry person, I see . . . d. The food I eat is (is not) related to hungry people because . . . e. I can (cannot) do something (anything) about people in other countries being hungry by . . . As the students enter the classroom, ask them to move around to the papers and write responses to the statements. Collect the papers and post them together. Examine the responses. Tell the students that responses may differ because we each have different perceptions of hunger. Tell them you want them to meet a teenage boy who has something to say about feeling hungry.	Butcher paper Marking pens
3. Read (or tape) the following excerpt from *Lito, the Shoeshine Boy:* "There are some days when I don't eat. Because there are some days when I don't do shines. People don't get their shoes shined when it's raining. The day is ruined. "So I walk around, see, with my mouth open catching flies because there's nothing to eat. I feel empty. I get a bad pain in my belly like something hot down there. "And when I don't eat, the worms do like this brrrrrrrrrrrr, like motor asking for food. The worms I have. And when they're full, my guts go . . . chee-chur-chee-chee . . . in my belly. It's bad. "Listen - brrrrrrrr - See how my guts are going now. The worms are hungry. They haven't eaten since this morning." (Reprinted with permission from *Lito, The Shoeshine Boy,* by David Mangurian. New York: Four Winds Press, © 1975.)	
4. Place the "What Is Hunger?" transparency on the overhead projector. Ask the students, "What is hunger?" and "What does it do to people?" Ask the students to describe in several sentences how they picture children and adults who suffer from hunger. Ask them to select the	Transparency Master: "What Is Hunger?" page J-83

Procedures	Materials needed
descriptive adjectives they used. Write these words on the chalkboard or overhead projector.	
Write on another section of the chalkboard the words HUNGER, UNDERNUTRITION, and MALNUTRITION. Ask the students to write a definition for each word on a piece of paper and to share them with the class.	
Ask one student to check the dictionary definition for each of these words. Write these definitions on the "Definitions" transparency.	Transparency Master: "Definitions," page J-84
Have the students respond to the following questions: "Do these definitions match any of those just shared? If not, how do they differ? Are these three words frequently interchanged? Should they be?"	
Share with students the definitions of the words from a nutritional standpoint. Write these definitions below the other definitions on the "Definition" transparency.	
Ask the students if any of the descriptive terms they listed could be separated into terms that describe persons suffering from undernutrition and malnutrition. Write these terms by each respective definition.	
Indicate to the students that the distinction between the terms is important in understanding the world hunger situation.	
5. Distribute the information sheet "Health and Nutritional Factors" and work sheet "World Hunger." Ask the students to answer questions 1 through 5, using information from the class discussion and the information sheet. Discuss student answers.	Information Sheet: "Health and Nutritional Factors," page J-86 Work Sheet: "World Hunger," page J-85
6. Ask, "Why are people hungry?" Question until poverty is mentioned. Ask them if this word covers most of the comments.	
Place the "Question Mark" transparency on the overhead projector. Ask the students, "What causes world hunger?"	Transparency Master: "Question Mark," page J-88
Write the words HUNGER/POVERTY in the center of the chalkboard. Draw a square around them. Ask students to think of all the forces that might contribute to the problem of world hunger/poverty. Write their responses on the chalkboard. Circle each word. Keep writing words until input from the students stops. Ask the students to examine the circled words and to look at the forces identified. Do you see any items that are related? In what way? Are there ways in which they could be grouped? (*Answers:* Natural forces, people-oriented ones, politically-oriented ones, educational ones, cultural ones.) What types of classifications do you see? (Refer to model for possible items to classify.)	Handout: "Model, Forces Affecting World Hunger/Poverty," page J-89
Ask the students to rearrange the forces under the classification system suggested above. (Note: If the students do not see any means to classify, suggest one or two to start them thinking.) Have the students answer question 6 on their "World Hunger" work sheet, using the chalkboard information.	
7. Show the "What Is Hunger?" transparency again. Ask the students the following questions: a. If these are major forces affecting world hunger, what can be done about them?	Transparency Master: "What Is Hunger?" page J-83

Procedures	*Materials needed*
b. What do you know about the forces? c. Is your information factual, emotional, or biased? d. What information is needed about the forces so that solutions can be proposed? e. What might be some ramifications of the solutions? Divide the students into groups of four to five. Ask each group to select one solution and present reasons why they think that solution represents a viable response to the problem of world hunger. After classroom discussion, ask the students to complete question 7 on their work sheets.	
8. Have the students summarize readings on malnutrition and children by preparing some means to interpret the impact and effects of protein/calorie deficiency on children. Suggest the following options: poster, collage, one-page fact sheet, poetry, and so on. Post the results of the students' work.	
9. Distribute "Infinity Ring" directions and paper to the students. Ask the students to make an infinity ring. (Strip should tear so that two interlocked rings are formed.) Ask the students the following questions: a. Did you expect the ring to form two rings? b. Could the interlocked rings relate to any of the nutritional problems we have been discussing? c. What if you wrote your name on one of the rings and wrote the words "hungry child" on the other ring. Now could it symbolize something? (Ask more questions to guide the students to suggest that what they eat has some relationship to food problems and hungry people.)	"Infinity Ring" directions, page J-90 Paper Tape
d. Give the students a "Protein Potentials Ladder" work sheet. Ask them to rank the 13 statements according to the importance of each idea. If necessary, explain the list of possibilities. As each item is read, ask the students to place a key word for that item on one of the steps. After all the items have been placed on each student's ladder, ask them to write a brief statement about the item they placed at the top of the ladder. Have each student suggest two actions he or she could take that relate to the top item. (Remind the students that it may only be a small step toward action needed on a larger scale.) Ask for student volunteers to share their responses. Help each student write goal statements to implement his or her action within the next two weeks. Plan for later follow-up to determine how much progress each student made.	Work Sheet: "Protein Potentials Ladder," page J-91
10. Contact the American Field Service, UNICEF, and local agencies for guest speakers, posters, and brochures pertaining to and explaining world nutrition problems and concerns. Someone at the local university might be an expert either in international economics, international agriculture, or international nutrition.	
11. Ask the students in a five- to ten-minute class discussion to explore answers to the following questions:	

Procedures	Materials needed
a. Why has the human being always had the problem of securing enough food for survival? b. Why does hunger exist in the world today? (Population, competition for land, unequal distribution of food, and lack of education) c. How has the human being throughout history secured and preserved food? Following the discussion, give a lecture on how people have secured and preserved food through history. Emphasize people as hunter-gatherers, people's domestication of crops and animals, people feeding the future generations.	
12. Discuss the Third World nations and their similarities. Identify new farming methods to help these nations and just where help is coming from. Discuss the issue of who gets help and who does not. Point out that the number one killer in these countries is malnutrition. Define words such as famine, starvation, malnutrition, and undernourished.	
13. Distribute a world map to the students and identify those countries which are located in the so called "hunger belt" of the world (Bangladesh, Cambodia, Cameroon, Central African Republic, Chad, Dahomey, El Salvador, Ethiopia, Ghana, Guinea, Guyana, Haiti, Honduras, India, Ivory Coast, Kenya, Lesotho, Malagasy Republic, Mali, Mauritania, Niger, Pakistan, Rwanda, Laos, Senegal, Sierra Leone, Somalia, Sri Lanka, Sudan, Tanzania, Upper Volta, Yemen [Aden], Yemen [Sanan]). Most of these 33 nations lie along a tropical belt. These and other poor countries in Africa, Asia, Central America, and South American contain two-thirds of the world's population, produce one-fifth of the world's food, and account for four of every five births. Have the students locate the nations on their maps and note the continents of these nations. Ask the students to hypothesize ways the nutritional problems of these countries might be solved.	Handout: "Hunger Belt Countries," page J-92
14. When planning a lesson on research and report writing and composition skills, use the following activity to help students achieve the subject matter objectives. Assign or let the students choose to read about one underdeveloped country.	
Supply the students with the "Key Nutrients Chart."	Handout: "Key Nutrients Chart," page J-93
Have the students write a report on the country of their choice. They should include in the report answers to the following questions: a. Is malnutrition a major concern in this country? b. Is chronic hunger a problem in this country? c. How does population affect food choice and food consumption in this country? d. How do social conditions affect food choice and food consumption in this country? e. What are this country's most common food sources? f. Do these foods supply key nutrients? g. What food sources and key nutrients are lacking in this country? h. What unhealthy results occur from the lack of important food sources and key nutrients?	

Procedures	Materials needed
i. What possible solution(s) can you propose and describe which would enable this country to overcome its problems and/or to develop better food and living conditions? Review research and report techniques with the students: Who? What? Where? Why? How? Have the students share with the class information about their country and its nutritional problems and possible solutions to the problems.	

Evaluation

Ask the students to write brief papers that state in their own words the effect of protein/calorie malnutrition. Also ask them to list several actions that individuals could take that might help this world problem. Discuss the student papers.

Food Service Involvement

1. Ask the food service manager or director for help in procuring samples of protein fortified products: textured vegetable protein, fish protein concentrate, protein concentrate from oil seeds, triticale (a hybrid grain with a higher protein content), high protein corn, protein-fortified pasta products, and seaweed protein concentrate. Let the students see and taste the products.
2. For a demonstration, have the food service manager prepare typical meals of some of the countries discussed in this lesson. Students can research the information and work with the food service department in planning the menu.

Lesson 13. Eating Behavior

An open-ended discussion lesson through which students have an opportunity to share ideas, opinions, and feelings about how social conditions can influence eating behavior

Discussion Sequence

Procedures	*Materials needed*
1. Inform the students that the purpose of this lesson is to explore their feelings about how social conditions can influence eating behavior. 2. Distribute copies of the work sheet "An Eskimo Family." 3. Ask the students to read the story and then recall, while you list them on the chalkboard, the kinds of changes that have occurred in the lives of the Eskimo. Discuss and emphasize the changes in the Eskimo eating behavior. 4. Tell the students that they now have an opportunity to share their feelings about how social conditions have affected the eating behavior of the Eskimo. Pose one of the following discussion questions: "How do you feel about the change in the Eskimo eating behaviors?" "What should the government do to improve this situation?" 5. Present the discussion rules outlined in the Introduction, page 5. 6. Restate the discussion question you have chosen: either, "How do you feel about the change in the Eskimo eating behaviors?" or "What should the government do?" 7. Conduct the discussion.	Handout: "An Eskimo Family," page J-95

Lesson 14. Factors That Influence Food Selection

A values awareness lesson designed to help the students explore their values about food choices

Activity Sequence

Procedures	Materials needed
1. Inform the students that the purpose of this lesson is to make them aware of their values about factors that influence food selection.	
2. Distribute the work sheet "Identification of Influencing Factors," page J-96. Ask the students to consider how they are influenced by these statements and to respond by checking one of three choices: often, once in a while, or never. Tell the students that even though they may not have actually purchased foods for their families, it is all right to respond to questions about selecting foods when they feel strongly about a particular issue.	Work Sheet: "Identification of Influencing Factors," page J-96
3. When the students have finished, ask them to form groups of two or three people and compare their responses. Introduce this part of the exercise by saying that it is sometimes helpful in determining what influences the selection of foods we eat by explaining a particular incident to someone. Tell the students, "Using the statements you marked with *often*, tell the other students in your group about an incident or event that you thought of when you responded to the question. Allow your partners to do the same by taking turns until all of you have completed discussion of all of the questions you marked with *often*." Remind the students that there are no correct or incorrect answers.	
4. After most of the students have completed their exchange with a partner(s), invite the students to share the statements and incidences that influenced their "often" responses with the class. As each student relates an incident, write key words on the chalkboard, such as cost, nutritional value, savings, ease of preparation, unpleasant memories, pleasant memories, rewards, pressures, storage, discounts, and taste under the heading Factors that Influence Food Selection.	
5. Encourage the students to share other factors that influence food selection that have not been identified. Try to glean key words from their oral statements and add them to the lists on the chalkboard. As an example: If a student says, "I would buy certain foods because they have been well-liked by my family," you might write on the chalkboard: well-liked by other family members.	
6. Inform the students that what you have written on the chalkboard is really a list of values about food selection.	
7. Ask the students to write on a piece of notebook paper "My own values about food selection include." Allow the students time to list below the heading the key words or values about food selection that they personally consider important. You may wish to ask the students to put their values in the form of a rank order.	
8. Conclude the activity by allowing students to share some of their values about food selection by saying, "Would anyone like to talk about any values they have about food selection?" You may wish to point out that some people will share the same values about food selection while some people have different values.	

Lesson 15. Educational Requirements for Food-Related Careers

An information acquisition lesson designed to help students identify the educational requirements of careers in nutrition

Objective

After completing this lesson, the students should be able to identify the educational requirements of selected careers in nutrition-related fields.

Key Facts

On-the-job-training is offered by an employer to an employee in an actual work situation. Some kinds of training may be short, lasting only a few days or weeks. Other kinds of on-the-job training may be quite lengthy, highly structured, and involve classroom instruction. Examples include apprenticeship (available for many careers in food service) and internship (for dietitians). A college degree may be a prerequisite for some jobs.

Two-year community colleges offer many programs which train young people for careers. Some careers require a two-year program to obtain the Associate of Arts degree; other careers require programs which are of shorter duration.

Advanced degrees are important for persons employed in some food-related careers, such as home economics, if they wish to obtain certain jobs in research, education, and administration. They must have preparation beyond the four-year bachelor's degree. Further study is required for a doctoral degree, which is the highest academic degree a person can attain in most arts and sciences.

Dietitians have specialized training in nutrition, biochemistry, food science, communication, and management techniques. To become a registered dietitian, a person must complete an internship or a program approved by the American Dietetic Association and pass an examination.

Once dietitians are registered, they may seek employment in administrative, therapeutic, teaching, research, and public health/public service positions in clinics, hospitals, schools, and other similar institutions. There is a growing role for dietitians in settings outside the hospital; for example, in state and federal nutrition programs, nutrition education, VISTA, Peace Corps, and cooperative extension programs.

Activities

Procedures	*Materials needed*
1. Bring to class a copy of the employment want ads section of a Sunday edition of a local newspaper. Hold the paper up and identify for the students the kinds of opportunities available in food-related careers. State the number you actually found. Ask the students, "In determining your interest in these food-related careers, or any careers for that matter, what are some of the things you might like to know?" (Students will probably suggest such considerations as job duties, training, or educational preparation, salary and benefits, and working conditions.) Ask the students, "Why is it important to learn about job duties and educational preparation?" (*Possible responses:* It is important to know one's interests in and probable ability to perform these duties. It is important to know about educational requirements so that one can start preparing for a career. Since courses and programs available in high school can provide valuable training, it is not too early to learn about job requirements. In addition, since many careers require post-high school education, students must plan now to take courses necessary for college entrance.)	Local newspaper

Procedures	Materials needed

2. Explain to the students, "Before looking at specific careers and training and educational requirements, it is necessary to examine the kinds of educational experiences that are available so that everyone is familiar with the standard terms and their meanings."

Tell the students, "We will build a ladder of the training and educational preparation steps that are available." Draw on the chalkboard a ladder with six rungs. Say, "Let's start building the ladder by putting on the first rung the educational experience that all of you are involved in, which is, of course, high school." Write "High School Programs" on the first rung of the ladder. Ask the students if they can identify some of the high school experiences that might provide them with some training and background for food-related careers. (Answers will vary with the school district. In general, the following are good sources of training: courses such as home economics, science, and consumer education; work experience such as cafeteria worker or teacher's aide; and special district programs such as regional occupational programs, which may offer training in food-related careers, or work-experience programs, which allow students to attend classes and work part time.)

Continue to build the ladder by asking students, "What would you put on the next rung?" Fill in the rungs on the ladder on the chalkboard as each is discussed in class. A suggested completed ladder appears as follows:

Advanced degree	Doctorate Master's degree
Advanced training	Internship Teaching credential
Four-year college or university	Bachelor's degree
Two-year community college	Associate of Arts degree Special programs
On-the-job training	
High school diploma	Courses
High school programs	Service work ROP work Experience programs

Procedures	*Materials needed*
After the ladder is completed, tell the students, "Rewarding food-related careers may be entered at every level. You must make choices based on your goals, interests, abilities, and the amount of time you want to invest in your career preparation."	
Distribute the work sheet entitled "Help Wanted: Food-Related Careers." Explain to the students: "This exercise will help you become aware of the kinds of career choices available. It will acquaint you with a sample of careers in food-related fields and the educational requirements for entrance into these careers." Ask the students to complete the questions on the work sheet using the sample "Want Ads," page J-98, as a resource. After the students have completed the work sheet, ask them to share orally their answers with the class.	Work Sheet: "Help Wanted: Food-Related Careers," page J-97 Handout: "Want Ads," page J-98
3. Tell the students, "At the beginning of this lesson, we developed a ladder of educational and training steps that are available. (Refer to the ladder on the chalkboard.) Let's now match up the careers we have discussed with the educational training steps on the ladder." Add to the ladder each of the careers next to its appropriate step. Ask the students to tell you where to place each career. Begin at the bottom rung. An example of a completed ladder appears below:	

Research nutritionist	Advanced degree	Doctorate Master's degree
Home economics teacher Clinical dietitian	Advanced training	Internship Teaching credential
Home economist Food scientist/technologist	Four-year college or university	Bachelor's degree
Dietetic technician	Two-year community college	Associate of Arts degree Special programs
Food inspector	On-the-job training	
Homemaker-home health aide	High school diploma	Courses
Cook	High school programs	Service work ROP work Experience programs

Procedures	Materials needed
Ask the students to suggest reasons for the levels of education required for the different careers. (*Possible answers:* More responsibility is demanded or knowledge needed to fulfill the job duties of some careers.) Ask the students if they know of any other food-related careers and ask them where they would place the career on the ladder. Advise the students that workers who hold the positions placed on the ladder may actually have much more education than the minimum mentioned in the want ad. Emphasize that the students can use such information about educational requirements to help them make the choices necessary for planning their own careers.	
4. Select nine students to take the roles of the job applicants who are identified on the "Job Applicant Activity Sheet." The nine students are to take the identity of these job applicants and will inform the rest of the class of their qualifications. The class will then match each of the nine students with an appropriate job. The nine students may either read or memorize their parts. Tell the other students to pretend that they are members of a personnel committee whose job is to hire people to fill the positions listed on the "Want Ads" handout.	Work Sheet: "Job Applicant Activity Sheet," page J-99 Handout: "Want Ads," page J-98
Explain to the students that they are going to meet nine applicants for those jobs. Each person is best qualified for one of the jobs. As the applicants introduce themselves, the students should note their names on the activity sheet. After each applicant has given his or her qualifications, the students should write after the applicant's name the title of the job they would give that person. Let applicant number 1 introduce himself or herself to the class. After he or she has finished, allow the students a minute to write on their papers the job they would assign him or her. Continue in the same manner until all job applicants have introduced themselves. Ask the students to share their answers orally.	
5. Visit local food-related training programs.	
6. Distribute "Occupations and Careers Related to Food Service and Nutrition." Using the handout, have the students research and complete the "Career Work Sheet" for one or more of the careers listed on page J-100. Inform the students that there are many references available that can help them learn more about food-related careers. Career guides and college catalogs are available in the library, career center, or counseling center. The cafeteria manager can also be a resource concerning food-related careers.	Handout: "Occupations and Careers Related to Food Service and Nutrition," page J-100 Work Sheet: "Career Work Sheet," page J-101
7. Make the list of resources entitled "References for Food-Related Careers" available to individual students who are interested in obtaining more knowledge about careers. Offer extra credit to those students who write a letter and ask for information.	Handout: "References for Food-Related Careers," page J-102
8. If possible, present a panel discussion about job requirements, using guest speakers who work in various food-related occupations and careers. Include a student member who has had food-related work experience (e.g., in a cafeteria or fast food restaurant).	

Procedures	*Materials needed*
Careers in Commercial Arts	
1. Discuss ways that expertise in commercial art could be used in food-related careers. Give examples of careers for commercial artists in the food industry (e.g., packaging designs and advertising). If possible, invite guest speakers to address those topics.	
2. Have the students redesign a food label for a commercially produced product, emphasizing labeling related to the product's nutritional value. Discuss the importance of nutritional labeling. Upon completion of the project, review design features.	
Careers in Government	
1. Ask the students to name government careers that are available in agriculture, food safety, food technology, and nutrition. Mention career titles the students have not identified.	Handout: "Occupations and Careers Related to Food Service and Nutrition," page J-100
2. Organize the students into four groups: city, county, state, and federal government. Further divide these four groups into civil service jobs and political appointments.	
Ask the students to complete the research questions about nutrition-related careers in government on the work sheet "Government Careers," based on their particular group assignment. (Research may be compiled through (a) using the library; (b) contacting and interviewing people in the appropriate career; or (c) bringing in guest speakers.) Have the students summarize their findings in written form or orally to the class.	Work Sheet: "Government Careers," page J-103
Note: If a career center is available at your school, encourage students to take advantage of it.	

Evaluation

Distribute the work sheet "Who Gets the Job?" page J-105. Correct the quizzes and discuss the answers with the students.

Food Service Involvement

The school food service department is a good source of examples of food-related careers. Invite food service personnel to speak to the students about their jobs, including skills and background needed, duties and requirements, and advantages and disadvantages.

Notes

Answer Key

Help Wanted: Food-Related Careers (page J-97)

1. Food Inspector
2. Clinical Dietitian, Food Scientist/Technologist, Home Economics Teacher, Home Economist, Research Nutritionist
3. a. Internship (unless clinical experience is a part of the four-year program)
   b. Teaching Credential
   c. Doctor of Philosophy degree
4. Dietetic Technician

5. a. Cook
   b. Homemaker-Home Health Aide

6 and 7. Answers will vary, depending on student interest. Encourage students to give reasons for their interest in the careers they mention.

Job Applicant Activity Sheet (page J-99)

1. Mark Ramirez, Food Inspector
2. Janet Edwards, Clinical Dietitian
3. Bill Rogers, Home Economist
4. Phyllis Chan, Research Nutritionist
5. Susan Anderson, Food Scientist/Technologist
6. Joseph Bond, Cook
7. Barbara Madison, Home Economics Teacher
8. Scott Forster, Dietetic Technician
9. Anne Johnson, Homemaker-Home Health Aide

Who Gets the Job? (page J-105)

1. b
2. c
3. a
4. b
5. a
6. a
7. a
8. b
9. c

Lesson 16. Nutrition Contributions

An information acquisition lesson designed to help students identify contributions of nutrition knowledge to other disciplines

Objective

After completing this lesson, the students should be able to list contributions of nutrition knowledge to other disciplines.

Key Facts

Nutrition is the study of foods and their effect on health, development, and performance. A knowledge of nutrition principles is essential to individuals in many different careers. (See "Careers with Nutrition Know-How" on page J-107.

The Recommended Dietary Allowances (RDA) are guidelines established by the United States Government for desirable daily intake of nutrients.

Activities

Procedures	*Materials needed*
1. Place the "Astro-Ade" advertisement transparency on the overhead projector. Ask the students the following questions about the ad: a. "What does Astro-Ade appear to be?" (It is a drink that was evidently consumed by the astronauts on their space flights.) b. "What do you think the advertisers want you to believe about the drink?" (They would like you to believe that it was good for the astronauts and is also good for you.) c. "What characteristics do you think food used on space flights should have?" (It should be nutritious and contain the Recommended Daily Allowances of necessary nutrients, be compact, be tasty, have a long shelf life, and require little or no preparation.) d. "What kind of knowledge would be needed to develop such foods?" (Someone developing such foods should have a knowledge of nutritional needs and food characteristics as well as ways to preserve and store foods and the ability to apply this knowledge to solve practical problems encountered in space flight.) Explain to the students that a food scientist is a person who has the necessary knowledge and ability to develop foods that are compatible with the different conditions and needs of space travel—a relatively recent challenge to food scientists. A food scientist is not a nutritionist but uses knowledge of nutrition in his or her work. Just as a food scientist uses the knowledge of nutrition to develop and improve food products which contribute to all aspects of our daily life, including the operation of the space program, many other workers outside the field of nutrition use the knowledge of nutrition. In this lesson you will learn about the many ways in which nutrition knowledge has contributed to other disciplines and how workers in many fields other than nutrition must apply their knowledge in effectively carrying out their jobs.	Transparency: "Astro-Ade," page J-108
2. Distribute the work sheet entitled "Nutrition Know-How to the Rescue!" Review the directions with the students and emphasize that they will use their copy of "Careers with Nutrition Know-How" to determine which worker can solve each problem. Tell the students that not all workers on this list are represented by a situation on the work sheet.	Work Sheet: "Nutrition Know-How to the Rescue!" page J-109 Handout: "Careers with Nutrition Know-How," page J-107

Procedures	Materials needed

Ask the students to share with the class any personal experiences they may have had in obtaining nutrition knowledge or services from any of the workers represented on the work sheet.

3. Ask the students to look again at the "Careers with Nutrition Know-How" list. Ask them, "Which three workers did we not use in completing the work sheet?" (*Answer:* physician, registered nurse, and school food service coordinator.) Ask the students the following questions:

   "Which of the three workers are you, as students, likely to be most affected by on a daily basis? Why? (The school food service coordinator, because this person plans the meals that students eat in the school cafeteria and has the ultimate responsibility for meal preparation and service.)

   "How do you think the school food service coordinator must use a knowledge of nutrition?" (It is important that the coordinator plan meals that are nutritious in order to meet the needs of growing young people. In addition, the coordinator must try to ensure that these foods are appealingly served so that students will want to eat those foods that are good for them.)

   "How might physicians and registered nurses use a knowledge of nutrition in assisting their patients?" (Many illnesses are diet-related, ranging from a general listlessness and lack of energy to serious diseases, including the following, which result from various deficiencies: scurvy—vitamin C deficiency due to lack of fresh fruits and vegetables; pellagra—resulting from an unbalanced diet with corn as the staple and not including essentials from other food groups; rickets—vitamin D deficiency related to poor living conditions and diet. In addition, diseases may be prevented by moderating intake of fat, salt, fiber, and calories. Physicians and registered nurses are in a position to determine the extent to which poor diet contributes to the ill-health or potential ill-health of their patients and can recommend corrective dietary measures.)

4. Invite a guest speaker chosen from the careers listed in "Careers with Nutrition Know-How." Prepare for the visit in the following manner:
   a. Make sure that the speaker knows that you wish him or her to discuss the ways in which nutrition knowledge is used in carrying out the job. The person might also discuss the background he or she received in nutrition.
   b. Inform the students of the speaker's visit beforehand and request that they write down questions they have so that they can be presented to the speaker.
5. Tell the students: "I am going to read a letter addressed to 'Dear Nutrition Know-It-All.' As you might expect, someone would like an answer to a nutrition-related problem. As I read the letter to you, look over your 'Careers with Nutrition Know-How' list and be prepared to suggest a worker who might solve the problem."

   Dear Nutrition Know-It-All:

   I am the president of a large and successful company. Unfortunately, four of our top executives have died of heart attacks. I am concerned about our remaining executives as well as our other fine,

Procedures	Materials needed

> hard-working employees. What can I do to help my employees head off these heart attacks before they strike again?
>
> Sincerely,
> Worried

Ask the students to suggest a worker from the list who could solve the problem. (They will probably suggest a physician; some might be specific and say cardiologist.) Read the answer to the first letter:

> Dear Worried:
>
> Worry no more. Enlist the services of a cardiologist. He or she can examine your employees and detect problems before they become serious. Furthermore, the cardiologist can advise them on the proper diet and exercise which can help prevent heart disease. Perhaps he or she can conduct a series of classes during company time. I suggest you join your employees in attending these sessions.
>
> Sincerely,
> Nutrition Know-It-All

Tell students, "Let's take a look at another letter and another problem which can be solved by a worker with nutrition knowledge." Read the second letter to the students:

> Dear Nutrition Know-It-All:
>
> My love of scuba diving and my interest in helping eradicate world hunger have led me to what I think is a great idea. I have done underwater research and have located hundreds of specimens of marine vegetable matter. If these could be converted into nutritious and appetizing foods, there would be plenty of food for everyone. What is my next step?
>
> Sincerely,
> Hungry to Help

After reading the letter, ask the students to suggest a worker from the list who could solve the problem (food scientist/technologist). Read the answer to the second letter:

> Dear Hungry to Help:
>
> Team up with one or more food scientists/technologists. Perhaps you will find one at your local university. She or he will be able to study your specimens to determine their nutritional value as well as the kinds of food products which might be developed. Good luck—and send me a sample if you succeed in reaching your goal.
>
> Sincerely,
> Nutrition Know-It-All

Procedures	Materials needed
Distribute copies of "Dear Nutrition Know-It-All." Discuss the answers. (*Answers:* 1. Home Economist; 2. Dental Hygienist; 3. Biologist; 4. Agriculture Science Extension Agent; 5. School Food Ser-	Work Sheet: "Dear Nutrition Know-It-All," page J-111

Procedures	Materials needed
vice Coordinator; 6. Registered Nurse [Some students may say home economist, which is not incorrect, but a registered nurse would be most likely to give the class in a hospital setting.])	
6. Have the students review the college requirements for a physical education (PE) major using the work sheet. Inform the students that nutrition knowledge is essential to effective participation in a career in physical education. Discuss.	Work Sheet: "Review of College Physical Education Program," page J-112

Evaluation

Distribute quiz entitled "Careers Using a Knowledge of Nutrition" on page J-113. Correct the quizzes orally by asking students to supply the answers.

Food Service Involvement

Give the students a list of careers in food service fields such as preparation, management, sales, service, and distribution. Students could interview people who have any of these careers in order to determine the educational preparation required.

Notes

Answer Key

Nutrition Know-How to the Rescue! (page J-109)

A. 1. Home Economist
  2. Biologist
  3. Dental Hygienist or Dentist (It is actually the responsibility of the dental hygienist to educate, but many dentists may provide this service to their patients.)
  4. Food Scientist/Technologist
  5. Agriculture Science Extension Agent
  6. Homemaker-Home Health Aide

B. 1. 1
  2. 3
  3. 5
  4. 2
  5. 4
  6. 6

Quiz, Careers Using Knowledge of Nutrition (page J-113)

A. 4
B. 8
C. 8
D. 4
E. 3
F. 1
G. 5
H. 7
I. 2
J. 6

Lesson 17. Career Values

A values awareness lesson designed to help students identify their values about food-related careers

Activities

Procedures	Materials needed
1. Display want ads from any large metropolitan newspaper on a bulletin board a few days before the activity.	Newspaper want ads
2. On the day of the lesson, inform the students that the purpose of this lesson is to help them identify those values they feel would influence their decision in selecting a food-related career.	
3. Inform the students that many businesses advertise in newspapers to find employees they need. Usually, these advertisements are worded to appeal to the personal values, abilities, and preferences of people who might be interested in that type of work. In the search for a job, it is, therefore, best if the applicant knows what his or her values are so that he or she can be sure that those values will be satisfied in the job selected.	
4. Inform the students in the class that they are going to brainstorm values people might have for choosing a particular job or career. (This part of the lesson may be done by having the entire class list its ideas on the chalkboard or by organizing the class into small brainstorming groups. Each of these groups then reports to make one list of job-related values for the entire class.) Write the words "Values About Jobs" on the chalkboard. Note that values mean important reasons the students might have. Give one or two examples, such as "A Chance to Learn New Skills" and "Retirement Benefits," and write them on the chalkboard under the heading "Values About Jobs." Working as a total group or in small groups, as described earlier, invite the students to list values anyone might have about selecting a particular job.	
5. Develop the list by recording the students' ideas on the chalkboard. If any of the students offer a long statement, restate the values in a word or phrase form or use one or two key words. (For example, "I think that people would want to work for a place that will help them to learn some new things so they can get a better job with more pay," which might be restated as "Opportunity for Advancement.") Note, however, that when any of the students' comments are restated, it is important that the students be asked if the restatement represents what they had in mind. Possible values the students might identify are good salary or hourly pay, opportunities for advancement and training, job security, flexible working hours, pleasant work environment, considerate and understanding supervisors, opportunities to help other people and meet people, interesting and exciting work, and so forth. Add any job-related values that the students may have missed.	
6. Point out that before a person selects a job, it is often very helpful to spend a few minutes determining his or her job-related values. Frequently, however, more can be learned about our own values by looking at available jobs. Two or three jobs may meet one's values;	

Procedures	*Materials needed*
however, one job opening is best because of another value we have that we did not consider when the list was made.	
7. Distribute the "Job Opportunities" work sheet. Ask the students to read through the various job opportunities and list the jobs they feel they would like. (Note that in selecting a job, they are to assume that they have the special qualifications required. Their main considerations, therefore, will be the type of work, working conditions, and so on.)	Work Sheet: "Job Opportunities," page J-114
8. Ask the students to complete the job choice value statement on the work sheet. Model a value statement on the chalkboard. Note that, if they have listed one value, they should complete the first statement. If they have become aware of more than one job-related value, they should complete the second statement.	
9. Invite some of the students to talk about the job they prefer and have them share their reasons or values for selecting that particular job. Note that their values may include any of those already listed on the chalkboard, or they may have discovered some values not listed. If the students report any values not on the chalkboard, add them to the list.	
10. Conclude this lesson with the following points: a. Job choice values are important to people. b. A person uses his or her job choice values as one basis in selecting a job. (Of course, there are other bases for selecting a job, such as whether the person is qualified for the job offered.) Thus, one's values affect his or her decisions about jobs. Frequently, one reason why people want to quit a job they have is that the job does not meet their values. It is helpful, therefore, to try to understand your values about a job before you start work.	

Lesson 18. The Selling of Food

An information acquisition lesson designed to help students evaluate nutrition claims made in the merchandising and advertising of food

Objective

After completing this lesson, the students should be able to evaluate nutrition claims made in the merchandising and advertising of food.

Key Facts

Advertising is communication between the manufacturer and consumer about products. The two major types of advertising are periodical (written ads) and mass (commercials).

Advertisers use many different approaches in their advertisements to promote products and attract the attention of the public. Some of these approaches are informative, helpful, or entertaining. Examples are as follows:

1. *Information.* Advertiser presents simple, truthful, and direct information about the product.
2. *Entertainment.* Advertiser presents the product in an entertaining way and hopes the product will be remembered as enjoyable.
3. *Give away.* Advertiser offers money off, coupons, and recipes.

Other approaches make implied promises about what the product will do for the user. Examples are as follows:

1. *Status.* Use of the product indicates that the person is successful and uses only the best products.
2. *Peer approval.* Use of the product will make friends or people like you.
3. *Good taste.* Use of the product shows that you are the kind of person who enjoys the finer things of life.
4. *Hero endorsement.* Use of the product will make you like the person who endorsed the product.
5. *Sexual attraction.* Use of the product will help you attract members of the opposite sex.
6. *Intelligence.* Use of the product suggests that you are sensible and can avoid advertising gimmicks.
7. *Independence.* Use of the product demonstrates that you think for yourself.
8. *Join the gang.* Consumer uses the product because it is being used by everyone else.
9. *Dangling comparatives.* Advertiser makes comparisons to nothing substantive.
10. *Testimonials.* Consumers make statements on the effectiveness of the product.
11. *Impossible results.* Advertiser makes claims that could never materialize.

Examples of these approaches can be found on pages J-115 through J-128.

Keys to critical evaluation of nutrition claims include the following:

1. *What is the source of the information?* Information from a federal agency or a major medical center is more likely to be significant than information from a food manufacturer or food information bureau.
2. *What is the status of the research?* Is the research in the test tube, animal, or human stage?
3. *How valid are the testing procedures?* Were scientific methods used?
4. *How extensive was the testing?* How many subjects were tested over what period of time and so on?
5. *What is reported about side effects?*
6. *Does the claim(s) seem realistically possible?*

Merchandising involves using various techniques to get consumers to purchase particular items in the supermarket and/or to shop at a particular supermarket.

Two factors that affect the purchase of an item in the supermarket are (1) the product and its label; and (2) the supermarket. The producer and the supermarket use different methods to get consumers to purchase their products. Some of the methods used by supermarkets to promote sales are as follows:

1. Items such as potato chips, candies, and soft drinks are distributed throughout the store to get consumers to walk past them as many times as possible so that they will purchase them on impulse.
2. High-impulse, high-profit items are placed at eye level. In addition, products are often aimed at a lower level to reach the child's eye level to cause a distraction and the sale of another item.
3. Higher profit items are placed next to lower profit items used in the same meal; for example, high-priced salad dressing is placed next to lettuce to remind the consumer to purchase an accompanying item.

4. High-profit items are placed at the end of the isle where the customer walks slower and is more likely to examine a display. Such displays usually contain corn chips or seasonal foods.
5. Stores are decorated attractively (air conditioned, music, and cheerful color schemes) to keep the customer there longer and to induce him or her to make more purchases.
6. Various signs are hung from the ceiling (hand-made and provided by the producer) to direct the consumer's attention to the item.
7. Impulse items such as candy, gum, magazines, and toys for children are placed at the checkout stand to get the customer to make more purchases.

Methods used by the manufacturers to promote product purchases include the following:

1. *Price reduction.* Prices are reduced as an inducement to purchase the item.
2. *Fancy wording.* Words such as "pen fed," "garden fresh," or "organic and natural" are printed on the labels.
3. *Size on container.* Cereal manufacturers use boxes with the same weight and volume but different sizes.
4. *Picture on label.* Beautiful pictures of the product are used on the label.
5. *Product offer.* Merchandise is offered for proof of purchase and money.

Activities

Procedures	*Materials needed*
1. Distribute the "Do You Listen?" work sheet to the students. Tell the students to name the product that each jingle belongs to in the space provided. (To add more enthusiasm, have the students complete the work sheet as a contest to find out who can get all the answers first.) Review the right answers on the work sheet by reading the jingle and having the students name the product.	Work Sheet: "Do You Listen?" page J-129
2. Have each student bring to class two food ads from a magazine or newspaper (preferably a magazine).	
Inform the students that the two printed ads they brought to class and the jingles are examples of two major forms of advertising: periodical (written ads) and mass (commercials). Write the two forms of advertising on the chalkboard.	
Write the definition of advertising on the chalkboard. (See Key Facts.)	
List the name and description of the various advertising techniques on the chalkboard. (See Key Facts.) Ask the students to use their magazine ads or television jingles to give an example of each of the particular advertising techniques. One example of each technique is included in the lesson for use during class lecture, pages J-115 through J-128.	Sample advertisements, pages J-115 through J-128
3. Distribute work sheets "Commercial Tricks Are for Kids!" and "Commercial Tricks Are for Everyone!"	Work Sheet: "Commercial Tricks Are for Kids," page J-130 Work Sheet: "Commercial Tricks Are for Everyone," page J-131
Tell the students to begin the assignment by watching the last few minutes of a television program and to count the commercials from that point. Students should conclude the count at the end of the program or at the end of the hour. Tell the students to record the commercials on their work sheet, using the "picket fence" (卌) method. Have the students choose *one food* commercial and answer the questions about that specific commercial at the bottom of the work sheets. If upcoming television programs are advertised, have the students count each set of ads as one commercial. Tell the students not to count network identification (e.g., this is CBS) or "newsbriefs" or "news update" as commercials.	
(Note: Students who cannot watch Saturday morning television can substitute one hour of afternoon television, weekdays, Monday through Friday, between 3 and 5 p.m.)	

Procedures	*Materials needed*
Discuss student findings. Have the students refer to the advertising techniques and identify orally what techniques their two commercials used. To determine which advertising techniques are most commonly used in television commercials and magazine ads, tally from student reports and work sheets using the following format: *Techniques* *Television* *Magazine* Information Status Peer approval Good taste Hero endorsement Sexual attraction Join the gang Entertainment Intelligence Independence Dangling comparatives Testimonials Give aways Impossible results (Note: Not all ads and/or commercials are easy to classify. However, match the commercial or ad to the most appropriate technique. This could be developed into a discussion of why some techniques are used more than others.)	
4. Distribute the "Do You Know?" work sheet. Have the students complete the work sheet; then discuss the correct answers.	Work Sheet: "Do You Know?" page J-132
5. Assign students to bring at least one food ad (magazine or newspaper) that makes a nutrition claim for the product to class. Inform the students that they will be evaluating the ad; that is, looking critically at the information printed on the ad. List on the chalkboard the keys to critical evaluation. (See Key Facts.) Have each student explain his or her ad according to that criteria.	
6. Distribute the "Is It True?" work sheet. Discuss student conclusions.	Work Sheet: "Is It True?" page J-133
7. Display two different brands of the same product (example: green beans) which are the same size and were purchased at the same store. (You may wish to use the transparency masters instead.)	Food items, or green bean label transparencies, masters on pages J-134 and J-135
Ask the students to respond orally to the question, "Why would you select one of these products instead of the other?" The following responses should be elicited from the students or supplied by the teacher and written on the chalkboard: cheaper price, national brand, more attractive label, past experience, placement on the shelf, free offer on label, and fancy wording. Define merchandising. Ask the students to indicate which of those items listed on the chalkboard are a direct result of merchandising. Put a check next to those items indicated. The checked items would include a more attractive label, placement on shelf, free offer on label, and fancy wording. Further, categorize the above list by telling the students that two factors affect the purchasing of an item in the supermarket: (1) the	

Procedures	*Materials needed*

product and its label; and (2) the appeal of the supermarket. Also, tell them that the producer and the supermarket use gimmicks to get consumers to purchase products.

8. Discuss how food manufacturers influence you to purchase their product rather than another. Hold up one can of food and ask the students, "What has the food manufacturer done to encourage you to purchase the product?" The following responses should be elicited from the students or supplied by the teacher and listed on the chalkboard: cents off offer, fancy wording on label, size of container, pretty picture on the label, and product offer.

   Have the students read the list and give some examples and the reasons why these are not valid reasons for purchasing items. (You may wish to write some key words next to each item.) (See Key Facts.)

9. Tell the students about the gimmicks that supermarkets use to get consumers to purchase particular products. (See Key Facts.) List on the chalkboard.

   As a homework assignment, have the students choose one product influence and two supermarket gimmicks used to influence consumers to purchase. Have the students visit the supermarket and write examples of three products and describe the influence of labeling and supermarket gimmicks. Discuss the students' findings.

10. Ask the students, "Why do you shop at a particular supermarket?" The following responses should be elicited from the students or supplied by the teacher and written on the chalkboard:

    a. Close to home
    b. Game or special product offer each week
    c. Store coupons from the newspaper
    d. One-stop shopping—supermarket/department
    e. Specialty store
    f. Large variety
    g. Open 24 hours a day
    h. Discount pricing
    i. Courteous sales people
    j. Use unit pricing
    k. House brand
    l. Quality and freshness of products
    m. Store housekeeping

    Remind the students that stores spend a great amount of money to get consumers to patronize their business.

    Ask the students to give reasons why those items listed above may not be good reasons for shopping at a particular store. Some responses might be:

    a. *It is close to home.* The store may be more expensive, thereby increasing living expenses.
    b. *Games or special product offered.* Nothing is free. Someone has to pay for it, and it is usually not the store.
    c. *Store coupons.* Most consumers do not purchase only the coupon item. The stores know most consumers will pick up other items.
    d. *One-stop shopping.* Although it may be convenient, the store may not have the best prices.

Procedures	Materials needed
e. *Specialty stores.* Although the store carries special items, it also carries other items which may not be the best purchases.	
f. *Large variety with lots of items.* The store may not move items quickly, and there may be stale foods.	
g. *Open 24 hours.* Although the store is convenient, its prices may be high, and it may have a limited number of selections.	
h. *Discount pricing.* Do not be fooled. Check whether every item is discounted.	
i. *Courteous sales people.* Beware, the prices may not be the best, or the store may not carry what you need.	
j. *Unit pricing.* Helpful, but how do these prices compare elsewhere?	
k. *House brand.* Check the quality. It is worth the saving?	
l. *Quality and freshness.* What are the prices?	
m. *Store housekeeping.* What are the prices?	
11. Have the students select a favorite food of low-nutritional value and a favorite food that is more nutritious. Ask the students to write a television commercial or plan an advertising campaign for each of the items selected. If possible, video tape the students' advertisements and play back the ads for discussion.	
12. When you are planning a lesson on *merchandising and advertising,* you may wish to use the following activity to help students achieve the subject matter objective:	
a. Have the students collect magazine and newspaper advertisements for food products that appeal to their personal taste. Discuss the particular advertisement that was chosen. Is the product a desired or needed item? What techniques did the advertiser use to draw your attention to the product?	
b. Have the students construct a box or container of a make-believe or currently manufactured item that they may present to the class in the form of a commercial advertisement. Have the class critique the presenter and his or her product for effective use of art skills in selling the product as a nutritional item.	

Evaluation

Distribute the "Quiz" and "French Cuisine Without Overweight," pages J-136 and J-137. Discuss the correct answers.

Food Service Involvement

1. Have the students write an informational ad for a school menu to be entered in a contest. The food service manager should be one of the judges. Obtain from the food service manager the necessary information for the ad. Write about the contest winner in the school newspaper.
2. Invite the food service manager to explain the merchandising techniques used in the school food program, such as posters, menu boards, menu chart (weekly, monthly), newsletters, radio, and newspapers.

Notes

Answer Key

Do you Listen? (page J-129)

1. M and M's
2. 7-Up
3. Wheaties
4. Folgers Coffee
5. Del Monte
6. Chicken of the Sea
7. Rice Krispies
8. Kentucky Fried Chicken
9. Burger King
10. Campbell's Soup
11. McDonald's
12. Rice-a-Roni
13. Star Kist
14. Sugar Frosted Flakes
15. Lipton Soup
16. Heinz
17. Imperial Margarine
18. Blue Bonnet
19. Oscar Mayer Weiners
20. Lay's Potato Chips

Do You Know? (page J-132)

A. Types of advertising

1. a. Periodical (written ads)   b. Mass (commercials)

B. Definitions

1. *Information.* Advertiser presents simple, direct, truthful information about the product.
2. *Status.* Use of the product indicates the person is successful and uses only the best products.
3. *Peer approval.* Use of the product will make friends or people like you.
4. *Good taste.* Use of the product shows that you are the kind of person who enjoys the finer things of life.
5. *Hero endorsement.* Use of the product will make you like the person who endorsed the product.
6. *Sexual attraction.* Use of the product will help you attract members of the opposite sex.
7. *Join the gang.* Consumer uses the product because it is being used by everyone else.
8. *Entertainment.* Advertiser presents the product in an entertaining way and hopes the product will be remembered in an enjoyable way.
9. *Intelligence.* Use of product suggests you are sensible and can avoid advertising gimmicks.
10. *Independence.* Use of the product demonstrates that you think for yourself.
11. *Dangling comparative.* Advertiser makes comparisons to nothing substantive.
12. *Testimonials.* Consumers make statements on the effectiveness of the product.
13. *Give aways.* Advertiser offers money off, coupons, and recipes.
14. *Impossible results.* Advertiser makes absurd claims.

Quiz (page J-136)

1. Communication between manufacturers and consumers about products.
2. a. Periodical (written ads)   b. Mass (commercials)
3. See Key Facts or answer to question 2, "Do You Know," in Answer Key.
4. a. Questionable state of research   b. Questionable state of information   c. Questionable testing procedures
5. The techniques used to get consumers to purchase a particular item in a supermarket and/or to purchase at a particular supermarket.
6. Cents off, fancy wording, size of container, pretty pictures, and product offer.
7. Staples all over the store, high-price/high-impulse items at eye level, companion items placed together, high-profit items at the end of the aisle, attractive decor, signs, and checkout displays.
8. Close to home, games or special product offer, store coupons, multistore under one roof, specialty store, large variety, open 24 hours, discount pricing, courteous sales people, unit pricing, house brands, quality and freshness of products, and store housekeeping.
9. (This evaluation is based on the model from the lesson.)

   The information is from Scale Gazers, a business that has making money as at least one of its goals.

   Just one person is quoted in the ad.

   No real testing procedures are described.

   No side effects are reported.

   Weight gain is generally slow and, thus, so is weight loss. Furthermore, the only way to lose weight is to cut down on caloric intake. There are no shortcuts to weight loss.

Lesson 19. Nutrition Labels

An information acquisition lesson designed to help students use nutritional labels to compare the nutritional value of foods

Objective

After completing this lesson, the students should be able to compare two or more food products for their nutritional value, using nutrition labeling.

Key Facts

Food manufacturers are required to have the following information in English on labels of food and drink products:

1. Name of product
2. Variety, style, and method of packing
3. Net weight
4. Name and address of the manufacturer, packer, or distributor
5. List of ingredients in descending order by weight
6. Special dietary properties, such as "salt free," "artificially sweetened," or "enriched"
7. Any artificial flavors, colors, or presevatives

Nutrition information on labels includes the following:

1. Serving size
2. Number of servings per container
3. Number of calories per serving
4. Grams per serving of protein, carbohydrate, and fat
5. Percent of United States Recommended Daily Allowances (U.S. RDA) per serving of protein, vitamins A and C, thiamin, riboflavin, niacin, calcium, and iron. The asterisk (*) is used to indicate that the product contains less than 2 percent of the U.S. RDA for that nutrient. (See page J-9 for recommended allowances.)

Nutrition information on labels is optional unless the manufacturer adds nutrients to the food product or makes a nutritional claim on the label or in advertising about the product. Then the requirements of nutrition labeling must be fully met.

United States Recommended Daily Allowances (U.S. RDA) are a variation of the Recommended Dietary Allowances (RDA) and are standards used to compare the relative nutritional values of food. The U.S. RDA are the amounts of nutrients considered to be high enough to meet the needs of almost everyone, including ages four and over.

The purpose of providing U.S. RDA information is to give consumers standardized information about the amount of protein and vitamins and minerals in a serving of the food. When 100 percent of the U.S. RDA is consumed throughout the day, most healthy persons can be relatively sure they are eating sufficient amounts of these nutrients.

The nutrient content (referring to protein, vitamins, and minerals) of foods is described in the percentage of the U.S. RDA that each nutrient provides.

Protein is not given only in grams. Because proteins vary in quality, special methods are needed to show consumers what part of their protein requirement they are receiving in a given product. Therefore, protein must be listed twice, once in total grams and once in percentage of U.S. RDA.

In addition to the mandatory vitamin and mineral listings on labels, 12 other nutrients may be shown. The nutrients include the following:

Vitamins	*Minerals*
Vitamin D	Phosphorus
Vitamin E	Iodine
Vitamin B_6	Magnesium
Folacin (folic acid)	Zinc
Vitamin B_{12}	Copper
Biotin (a B-vitamin)	
Pantothenic Acid (a B-vitamin)	

Manufacturers do not have to list ingredients on a product for which there is an identity standard if the product meets the standard. Examples include most canned fruits and vegetables, milk, cheese, ice cream, bread, margarine, certain sea foods, sweeteners, and salad dressings.

The nutrition information panel must always be on the right side of the label when viewed from the front of the package.

Activities

Procedures	*Materials needed*
1. Using three large pieces of butcher paper, write one of the following open-ended sentences on each one: a. "One thing I really want to know about the food I buy is . . . " b. "Food labels do not tell me enough because they do not include . . . " c. "Nutritional labeling is . . . " Put the pieces of butcher paper up on the classroom walls. Have the students walk around the classroom and write their responses on the butcher paper. Discuss student responses. Review the information required on food labels. Ask the students if they think other information should be required on food labels. Possible suggestions include percentage ingredient labeling and full-ingredient labeling on all products.	Butcher paper
2. Give the students an assortment of food labels, some with nutritional labels and some without nutritional labels. Each student should have a food label. Ask the students: How much protein does your food contain? *(Answers will vary.)* How many calories does each serving of your food contain? *(Answers will vary.)* How much vitamin A does your food contain? Which product has the highest percentage of RDA for protein, vitamin A, vitamin C, thiamin, riboflavin, niacin, calcium, and iron? Which food has the most calories? Which food has the least calories? Which food has the most and the least additives?	Food labels
3. Have the students write down all the information they can find on the label. Discuss why each item is important to consumers. Discuss which items are required and which are optional. (Refer to Key Facts.)	Food labels
4. Discuss what serving size means. Give an assortment of various labels from protein-rich foods to students, including current price information. (Use labels from such foods as canned meat, fish or poultry, eggs, milk, cheese, and legumes.) If possible, give each student a different label. a. Have the students determine the price per serving by dividing the number of servings into the total price. b. Have the students determine the percentage of the U.S. RDA for protein they would receive if they ate one serving of this product. Some students may receive a label which does not list the protein content. Have a discussion about the problem this type of label presents to consumers of this product. Ask the students to write their information on a chalkboard chart in the following format: *Item* — *Price per serving* — *Percentage of the U.S. RDA protein requirement per serving* Ask the students to decide which product provides the most protein per serving and which product provides the least amount of protein	Protein-rich food labels

Procedures	*Materials needed*
per serving. And ask the students to determine which product provides the most protein per cost and the least protein per cost (which is the cheapest protein source and which is the most expensive protein source). Discuss the classroom findings.	
5. Divide the students into groups of four. Give each group an assortment of beverage food labels, such as fruit juices (prune juice, tomato juice, and orange juice), fruit beverages, soft drinks (sugared), soft drinks (diet), milk (regular, low-fat, nonfat, and so on). Present the following situation to each student group: Four people are choosing a beverage to satisfy a particular need. Which product would you suggest they choose? (1) Carol wants to choose the one with the least calories; (2) Mike wants the most vitamin A he can get per serving; (3) Debbie wants the most iron she can get; and (4) Mike wants lots of calories. Answers will vary according to the available labels. Have the students report on their findings.	Beverage food labels
6. Take the students to the grocery store. Have them choose a food item to research, such as a fruit, vegetable, fish product, and so on. Have each student complete the chart entitled "Label Clues for Consumers." When the students have returned to class, ask them, "Is it easy or difficult to compare different forms of the same food? Why or why not?" Have the students decide which food product they would buy and why. The students can perform this task as a homework assignment.	Chart: "Label Clues for Consumers," page J-138
7. Have each student suggest a change he or she would like to make to nutritional labeling requirements. Ask each student to write a letter to the Food and Drug Administration and to the Federal Trade Commission. (The same letter may be used twice.) Each letter should include a list of the current nutritional labeling requirements, a statement of the suggested change, why there is need for the change, and the possible benefits from making the change.	
8. Divide the students into pairs. Give to each pair of students bread, cereal, or cracker labels, one for a whole-grain product and one for a refined-grain product. Have the students copy down the nutritional information contained on each label. Have the students compare each nutritional category. Ask the students to determine from the label information which bread, cereal, or cracker product has a higher nutritional value. Compare class results and determine if there are consistent class findings.	Bread, cereal, or cracker labels
9. Have the students divide into groups of four. Ask each group to prepare a presentation for a group of junior high school students entitled "Comparing Nutrition Labels." Each student group will determine the content of the presentation, collect appropriate labels, and practice delivering their presentation. The teacher will find the presentation sites for the students.	
10. Ask the students to imagine that they are going to care for Uncle Hiram, Aunt Lilly, and Cousin Phil (all adults) in the country following an accident. Uncle Hiram and the other relatives are unable to prepare their own meals, and it is especially important right now that they eat a nutritionally adequate diet. You have just arrived. It is nearly dinner time and you have no time to go to the market, which is 12 miles away. You open the cupboard and discover only canned goods. (Teacher displays items in plain labeled cans. If plain labeled cans are not available, cover the regular label and print only the name of the item on each can.)	Plain labeled cans of tuna fish (3 cans), stewed tomatoes (1 can), green beans (1 can), creamed corn (1 can), baked beans (1 can), pears (1 can), and peaches (1 can)

Procedures	Materials needed
Ask the students to determine what nutritional information they need from the label to help them decide what they will serve for a meal.	
Hold up the cans of tuna and ask the following:	
What information would you need from the label to help you decide whether you should open one, two, or three cans of tuna? *(Serving size)*	
Hold up the canned pears and canned peaches and ask the students what information they need from the label to help them decide if these fruits are appropriate for Aunt Lilly. She needs a high-protein, lowfat, and low carbohydrate diet. *(Protein, carbohydrate, and fat content)*	
Hold up the stewed tomatoes and green beans and ask the students what information they need from the label to help them decide which vegetable to serve to Cousin Phil. He needs a high proportion of vitamin C and potassium to aid his recuperation. *(Vitamin and mineral content)*	
11. When you are planning a lesson on *presentation* and *commercial art principles,* the following activity may be used to help students achieve the subject matter objective:	
a. Using information found in the Key Facts section, have the students redesign a food label for a commercially produced product, emphasizing labeling related to the product's nutritional value.	
b. Discuss the importance of proper and effective nutritional labeling that a product should and must contain.	
Upon completion of the project, critique the design features and the effectiveness of the labels, using as a guide the nutritional impact of the label on the consumer.	
12. When you are planning a lesson on *spelling/vocabulary words,* you may wish to use the following activity in helping students achieve the subject matter objective:	
Introduce the following spelling/vocabulary words:	
Calorie Protein Carbohydrate Fat Thiamin Riboflavin Niacin Calcium Iron Polyunsaturated Saturated Cholesterol Fatty acid Gram Percentage Sodium Nutrition Dietitian	
Supply each student with a dictionary to define the spelling vocabulary words, and have the students write and define the words on paper.	Dictionaries
Assign words to be studied as homework, and stress that the students should know or be familiar with the correct spelling and meaning for follow-up activities within one or two days:	
a. *Team Competition:* Divide the class into three teams and send the first three students from each team to the chalkboard. Pro-	

Procedures	*Materials needed*
nounce one spelling word from the list. The student who first correctly writes the word on the board earns one point for his or her team. The winning student remains at the chalkboard; the other two return to their seats, and two more students go to the chalkboard. Repeat the process with a new word each time until a team reaches the agreed-upon number of points as "winner" (15, 20, 21, and so on).	
(*Note:* A winning student may stay at the chalkboard for only three consecutive correct spellings; then the student must sit down and a new team member goes to the chalkboard. This rule precludes the "whiz" monopolizing the game. A more difficult version of this game would be for the teacher to give definitions of the spelling word. The student must correctly identify and spell the word before receiving a point.)	
Distribute the "Vocabulary Match" work sheet. Have the students match the words with the definitions.	Work Sheet: "Vocabulary Match," page J-139
b. *Word Search Puzzle:* Have the students create a "seek-and-find" word search puzzle containing the vocabulary words. Students can trade puzzles to solve.	
c. *Scramble Words:* Have the students create a "Scramble Words Puzzle" by writing or typing each spelling word but scrambling the order of the letters. Students can trade papers and unscramble the letters to spell the word correctly.	
d. *Crossword Puzzle:* Have the students create their own crossword puzzles, using the spelling words and their definitions.	

Evaluation

Distribute the work sheet "What's for Dinner?" page J-140, and copies of the labels for chunk pineapple, page J-141; stewed tomatoes, page J-142; and cut green beans, page J-143. Have the students complete the work sheet. Evaluate the answers and discuss the correct answers with the students.

Food Service Involvement

Students can learn about the nutritive value of the foods they eat in the cafeteria by evaluating the labels from these foods. Ask the cafeteria manager to obtain labels from items such as burritos, enchiladas, or corn dogs. Have the students review the nutritive value of the food products. Invite the cafeteria manager to class when the students discuss their findings.

Answer Key

Vocabulary Match (page J-139)

A. 5
B. 11
C. 13
D. 2
E. 9
F. 6
G. 16
H. 4
I. 10
J. 1
K. 12
L. 3
M. 18
N. 7
O. 17
P. 15
Q. 14
R. 8

What's for Dinner? (page J-140)

A. Green beans
B. Stewed tomatoes
C. Green beans and stewed tomatoes
D. Green beans because they meet most of their needs and concerns

Lesson 20. Validity of Nutrition Information

An information acquisition lesson designed to help students in high school identify two criteria for evaluating the validity of nutrition information

Objective

After completing this lesson, the students should be able to look critically at nutrition information and evaluate its validity, based on at least two criteria.

Key Facts

Guidelines for students to use to evaluate the validity of nutrition information are presented in the "Validity Tester" work sheet on page J-144. The handout entitled "Sources of Reliable Nutrition Information" can also be used for determining the validity of nutrition information.

Activities

Procedures	*Materials needed*
1. Tell the students that as a result of using questionable nutrition information, Americans spend billions of unnecessary dollars and sometimes reduce the quality of their lives and may even lose their lives. Ask the students to give examples of sources of nutrition information that they have used. (Examples might include magazines, books, and television.) Explain to the students that in this lesson they will discuss ways to evaluate nutrition information available from books, magazines, radio, and television.	
2. Bring to class one or more popular magazines and/or newspapers containing an article on nutrition or dieting or use a nutrition-related book. Share the article or book with the class. Ask the students if they could determine the truthfulness or validity of the information in such an article or book. Discuss the answers.	Popular magazines, books, or newspapers
Distribute the work sheet "Validity Tester." Discuss the items on the work sheet. Apply the criteria in the work sheet to the article or book discussed earlier in this lesson. Inform the students that these same criteria can be helpful in evaluating nutrition information from the media, such as the credentials of the speaker. Discuss the examples. (For example, information regarding the credentials of a talk show guest.)	Work Sheet: "Validity Tester," page J-144
3. As a homework assignment, ask the students to use the criteria listed in the work sheet to evaluate nutrition information in a magazine article or book. The magazine or book should be one from the students' homes, school, or local library. Ask the students to write a summary of their findings, including a recommendation to other readers regarding the validity of information in the article or book. Discuss the results of the homework assignment. Ask the students if they had any difficulties in determining the reliability of the nutrition information they researched.	
4. Inform the students that sometimes the information needed to apply the criteria in the "Validity Tester" work sheet may be difficult to obtain. For this reason it is useful to have the knowledge to evaluate the many food claims bombarding the public. Comparing the information with a reliable nutrition text can be helpful. Also, seeking the advice of a reliable nutrition resource person can be useful.	

Procedures	Materials needed
Distribute the handout "Sources of Reliable Nutrition Information." Discuss. Ask the students if they have had any previous contacts with any of the sources listed. If possible, invite a representative from one of the agencies/sources listed, such as a dietitian from a local hospital, to discuss the topic of evaluating the validity of nutrition information.	Handout: "Sources of Reliable Nutrition Information," page J-145

Evaluation

Distribute the work sheet "Evaluating Nutrition Information" on page J-146. Evaluate and discuss student responses.

Food Service Involvement

Discuss the lesson with the food service staff and ask for assistance with finding guest speakers on the topic of finding reliable nutrition information. Food service staff may also be able to assist with finding examples of nutrition information for the class.

Notes

Answer Key

Evaluating Nutrition Information (page J-146)

1. The book in example B seems to be a reliable source of information, based on the title page.
2. The answers will vary, but they should include the principles discussed on the work sheet "Validity Tester," page J-144.

   Examples of correct responses are as follows:

   a. (1) Miracle cure suggested
      (2) Questionable credentials of author

   b. (1) Credential of the author presently working in nutrition at a recognized university and author's degrees indicating training and experience in the field of nutrition
      (2) Foreword by representative of professional nutrition group (American Dietetic Association)

   c. (1) Miracle cure suggested
      (2) Questionable credentials of author
3. Answers will vary. Use the handout "Sources of Reliable Nutrition Information" as a resource.

Lesson 21. Food Budgets

An information acquisition lesson designed to help students identify two ways the consumer can decrease the food budget without sacrificing the nutritional quality of the diet

Objective

After completing this lesson, the students should be able to describe two ways consumers can decrease the food budget without sacrificing nutritional quality.

Key Facts

Ways to save money on the food budget include the following:

1. Buy store brands or generic food products instead of nationally advertised brands.
2. Avoid convenience foods. (Usually, the more convenience built into the product, the more it costs.)
3. Use coupons.
4. Plan menus prior to shopping.
5. Make a shopping list.
6. Use weekly food ads to take advantage of advertised specials and to do comparison shopping.
7. Shop around to compare prices by store.
8. Use unit pricing.
9. Buy in quantity or large sizes if that amount can be used or stored without spoiling.
10. Buy when the price is right and when the food is in season.
11. Take advantage of store specials, including unadvertised specials.
12. Buy by cost per serving, not by weight or volume.

Budget-saving tips for specific foods are as follows:

1. *Vegetables.* Compare prices of fresh, frozen, and canned vegetables, even if they are in season. Usually, peas, spinach, and lima beans are cheapest frozen (without sauce). Canned vegetables in pieces and cuts will often be less expensive than whole vegetables.
2. *Fruits.* Fruits are cheapest when they are fresh and in season. Frozen fruits are the most expensive.
3. *Meat.* It is cheaper to buy ground beef with soy protein added in the store than to add soy protein at home because stores buy the protein in bulk. Ground turkey is an economical substitute for ground beef. A mixture of turkey and beef can save money and provide beefy-tasting hamburgers.
4. *Dairy.* Store brand dry milk in bulk is the least expensive. Nonfat fluid milk is not only cheaper than whole milk but is lower in fat and calories. Cheese in spray-type cans is two to three times as expensive as loaf cheese.
5. *Margarine.* Margarine in squeeze bottles is the most expensive kind of margarine. Stick margarine is the least expensive.
6. *Baked foods.* Waffles and pancakes from a mix are often the least expensive. Cake mixes are generally cheaper than homemade. Other convenience mixes with chocolate, such as brownies, frosting, and pudding, are often less expensive because the manufacturers can buy chocolate in bulk.

Generally, the larger the size of the package, the less per unit (ounce, pound, gram) it costs. This rule does not hold when smaller sizes are sale priced. However, only purchase the quantity that you can use without waste.

Larger sizes can save a consumer 18 percent or more in the cost of a particular product.

Coupons can save a consumer from 7 percent to 20 percent of a weekly food bill.

Store labels can save an average of 10 percent to 20 percent over nationally advertised brands. Store labels, also known as private labels, are a store's way of providing a savings to the shopper. Products such as Lady Lee, Bonnie Hubbard, Janet Lee, Harvest Day, and Albertson's are packaged by nationally advertised manufacturers and are usually of the same quality. Nationally advertised brands, also known as name brands, cost more because the company's advertising costs are passed along to the consumer in the price of the product. These brands include Bird's Eye, S & W, Del Monte, Libby's, Campbell's, Heinz, and Oscar Mayer.

Generic food products are usually cheaper than store brands. These products may be of lesser quality than nationally advertised brands in that they may be blemished or of irregular shape. They are packaged in plain packages with no pictures or brand names.

Basic foods are those used to make meals from scratch. Preparing meals from scratch, although more time-consuming, generally saves money and may provide better nutrition than preprepared food products.

Substitutes are foods or combinations of foods that replace more costly foods used to achieve balanced meals. Eggs are a cheaper source of protein and can be substituted for meat. A tuna casserole with noodles and cheese can be substituted for the meat value, milk value, and bread value in a meal. These substitutes maintain the nutritional quality of the diet while reducing the budget.

Convenience stores are those in which quick service is the selling point. These stores have a lower sales volume than large chain supermarkets and cannot offer the number of choices that a supermarket offers. Therefore, food costs are higher at convenience stores because they cannot take advantage of large quantity buying.

Convenience foods are those that have been preprepared or offer some time saving element. Frozen vegetables offer the convenience of having been cleaned and cut into bite size; TV dinners offer a complete dinner sectioned by serving size and ready for heating.

Convenience foods with cheese may be less expensive because the manufacturer purchases the cheese at bulk prices. Skillet main dishes, canned spaghetti, and packaged spaghetti dinners can be less expensive than homemade dinners.

Unit pricing means the cost per unit of measure, such as ounce, pound, or piece. For example, Brand X orange juice sells for 96 cents for 12 ounces or about 8 cents per ounce. Brand Z orange juice sells for 85 cents for 12 ounces or about 7 cents per ounce. Brand Z would be the best buy. Unit pricing is not a mandatory service for stores to provide, but some stores offer unit pricing so that their customers can make the most economical purchase.

Nutrition labeling is required if a nutritional claim is made for the product or if nutrients which would not naturally be present are added to the product. Nutrition labeling must include the number of calories, the amount of protein, carbohydrate, fat, and the percentage of U.S. RDA for protein and seven vitamins and minerals (vitamins A and C, thiamin, riboflavin, and niacin, and the minerals, calcium and iron). (See Lesson 19, page 72, for further information about nutrition labeling.)

Activities

Procedures	Materials needed
1. Ask the students, "Where does your family shop for food?" List their responses on the chalkboard or on butcher paper. Ask the students why their family shops for food at this (or one particular) store. (Possible answers may include: close to home; low prices; like the brands they sell; has good produce; has good meat department; has many choices or good selection; service is good; fast checkout; lowest prices in the area.)	Butcher paper
2. Ask the students how much they think a family of four spends each week on food. This cost will vary, however, the *USDA Family Economics Review* (1982) estimates a moderate cost food plan to be $95.20 per week. Ask the students what kinds of things consumers do to cut food expenses. As the students respond, restate or rephrase their responses to be consistent with the following list, as appropriate. (*Possible answers:* plan a menu; use a shopping list; use food ads; use coupons; compare prices; buy store or private brands [instead of name brands]; read labels [to compare for nutrition]; buy foods [produce] in season; buy the largest size [that you can use]; avoid convenience foods; use unit pricing; buy by cost per serving, not by weight or volume; buy generic food products.)	
3. State that one objective of shopping for food is to select the foods which will contribute to optimum health and well being. These foods are found in the Four Food Groups: Milk and Cheese Group; Meat, Poultry, Fish, and Bean Group; Fruit and Vegetable Group; Bread and Cereal Group.	
4. Ask the students to go to the supermarket with the work sheet "Brand Names" and write down the names of ten food products they find on the shelves. (This exercise can be used to test the students' knowledge of store brands.) Survey the students about the brands that people use.	Work Sheet: "Brand Names," page J-147

Procedures	Materials needed
Ask them: "Why do they buy these particular brands? Do people choose certain brands because of quality? Taste? Price? Advertising appeal? Custom? Traditions?"	
5. Play the "Price Is Right" game to get the students thinking about price comparisons. Volunteers may play the pricing game or the teacher can divide the class into teams of four or five students each. Set up empty packages to represent three or four products at a time. Ask the players to guess which product is the lowest price and what that price is. Also, have them arrange the products according to price. Comparison groups can be arranged as follows: Type of food (such as cereals) Type of processing (freeze dried coffee, powdered instant, ground) Type or amount of prepreparation (canned orange juice, frozen orange juice, fresh oranges) Comparisons should include national and store brands and should be equivalent amounts. Ask the students to make statements about price comparisons after playing this game. Summarize this activity by writing the students' comments and other relevant information in the following format on the chalkboard. Examples of statements are as follows: a. Store brands and generic food products are cheaper than national brands. b. Frozen foods other than convenience foods usually cost less than fresh or canned products. c. Usually, the more convenient the product, the more it costs.	Food packages
6. Conduct a "taste test." Provide a food found in different forms (such as fresh, frozen, and canned) or a food represented by different brand names, including a store brand). More than one evaluation experience can be provided. Distribute one "Food Evaluation Form" for each set of foods. Have the students evaluate the foods without knowledge of brands or forms in which the food was purchased. Discuss the evaluations.	Food items Work Sheet: "Food Evaluation Form," page J-148
7. Collect the food ads from the local newspaper or ask the students to bring the food section of the newspaper from home. Have the students examine the entire food section to determine what seem to be the best buys for the week. Discuss their selections. Be sure that they see that best buys may be sale items in most stores but that the prices do vary. Ask them to identify the best buys (or weekly specials) and compare by store. Ask the students to identify other helpful information found in the food section. (*Answers:* recipes, coupons, nutritional information, cost cutters.)	Local newspaper
8. Have the students make up a two-day menu for a family of four (two adults and two children, ages eight and twelve years). Point out that the students should consider the food ads and the coupons available when designing their menus. The students may work in groups of three. Consideration should also be given to nutritional needs during this menu planning activity. Have the students refer to the Food Group Guide for meal planning information.	Food Group Guide, Appendix F
From the two-day menus, have the students make a food list, choosing 15 key items to compare the cost of nationally advertised brands	Work Sheet: "Supermarket Sweep," page J-149

and store and/or generic brands. Hand out the work sheet "Supermarket Sweep" to the students to help them organize the information. Take a trip to the supermarket as a class activity (or assign as an afterschool activity). Have the students survey the products chosen and list the prices. Discuss the findings the next day in the classroom.

Ask the students to select one dinner from their two-day menu plan. Have the students go to the supermarket to compare the cost of this meal by recording the regular prices of nationally advertised brands and then recording the prices of the store brands, generic food products, foods with discount coupons, and advertised specials. The students should total costs of both methods of shopping and compare the results.

9. Divide the class into four groups. Have each group create a menu for one meal. Each group can plan one meal (breakfast, lunch, or dinner) of the day so that each group has a different meal except the fourth group. Group Four can plan any meal they wish. Each group has $3.50 to spend for food. Tell them they are planning the meals for a family of four. Tell the students the meals will be evaluated on appearance, ease of preparation, creativity, extent to which the Four Food Group requirements were met, and the degree to which the budget allowance was adhered to. If possible, prepare the meals planned.

10. Distribute the work sheet, "Unit Pricing." Ask the students if they know how to get the unit price or cost per ounce (cost per pound) of a product. (*Answer:* Divide the cost of the product by the number of ounces or pounds or whatever individual unit of measure.)

Work Sheet; "Unit Pricing," page J-150

Give an example on the chalkboard:

Problem: A six-pack of a soft drink, Brand X, costs $1.26. To find out how much each bottle costs, divide $1.26 by 6.

$$\begin{array}{r} .21 \\ 6\,\overline{)\,\$1.26} \end{array}$$

Answer: $.21 each

Brand Y, an eight-pack of a soft drink, sells for $1.76.

$$\begin{array}{r} .22 \\ 8\,\overline{)\,\$1.76} \end{array}$$

Answer: $.22 each

Which brand of soft drink would be the better buy?

Answer: Brand X

Have the students complete the work sheet.

11. Arrange a trip to the supermarket and have the store manager lead the students on a tour.

Arrange for the tour leader to discuss and show the students the following marketing features:

a. Marketing and merchandising techniques; i.e., why the food items are arranged on the shelves and on the aisles in the manner they are; why the various categories of food are put where they are in the store layout; why the supermarkets stock nonfood items; and how to look for advertised or unadvertised specials.
b. How to get the best buy in produce

Procedures	Materials needed
c. How to get the best buy in the meat department (At this point the butcher may direct the tour.)	
d. How buying store brands or generic food products can save money and what companies are packaging various store brand or generic food items	
e. Information on services that the store offers shoppers	
12. When you are planning a lesson on *design or commercial art principles,* the following activity may be used to help students achieve the subject matter objectives: Give directions about how to design a consumer pamphlet that tells shoppers how to save money on their food bills. Have the students work in pairs to develop a pamphlet from standard 8½-by 11-inch paper or 8½-by 14-inch legal size paper. The students may use any title and create any design that utilizes the information that they have learned. The pamphlet must include a minimum of seven ways to save money on the food budget. Evaluate the pamphlet for accuracy of information, organization of material, design or creativity, and clearness of presentation.	
13. When you are planning a lesson on *economic inflation,* the following activity may be used to help students achieve the subject matter objectives: Provide the students with a definition of inflation and ask them for examples of ways in which inflation has affected the average American family. (Inflation is a time of generally rising prices for goods and services. The dollar buys less and less.) Ask the students to identify how they spend their money. (How much goes for food? What do they eat?) Ask the students to list their five favorite "snacks." Have all the students compile their favorite snacks into one major list. Invite the school nurse or home economics/health teacher to help the students to identify those foods on the snack list that are of lower nutritional value or of higher nutritional value. Ask the students to do a cost analysis of their two lists. Would they spend less on food by buying nutritionally balanced food? Ask the students to identify ways that they might continue to eat a good nutritionally balanced meal when their dollar does not go as far. (Choose foods higher in nutritional value and compare prices.)	

Evaluation

Distribute the work sheet "Saving Money" on page J-151. Evaluate answers and discuss correct answers.

Food Service Involvement

Ask the cafeteria manager to share how cafeterias combat the higher costs of food without sacrificing nutrition. Possibilities are planning meatless meals and using soy products as a supplement, cheese and eggs, turkey products, poultry, and commodity foods.

Answer Key

Unit Pricing (page J-150)

To figure out unit pricing, *divide* the cost of the product by the *unit of measure.*

A. Brand Z orange juice

$$\begin{array}{r} \$.07 \\ 12 \text{ ounces } \overline{\big)\ \$.85} \end{array} \qquad \frac{\$.07}{\text{Cost per ounce}}$$

The best buy is *Brand Z*

B.

	Cost	Ounces	Cost per ounce
Jiffy Peanut Butter	$1.19	12	$.099
Jiffy Peanut Butter	$1.74	18	$.097
Skippy Peanut Butter	$1.35	12	$.11

The best buy is the 18 ounce Jiffy peanut butter.

Saving Money (page J-151)

1. Techniques include:
    - a. Buy store brands or generic food products rather than national brands. Store brands are labeled for the store chain; generic food products carry no brand or store name.
    - b. Avoid convenience foods. Convenience foods cost more because the cost of preparation is included in the purchase price.
    - c. Use coupons. These include "cents-off" coupons or refunds.
    - d. Use unit pricing. Unit pricing involves figuring cost per unit of measure to get the most economical buy.
    - e. Buy in quantity or large sizes. Larger sizes generally cost less than smaller sizes of the same product.
    - f. Take advantage of advertised specials. These include special sales which are advertised in the newspaper.
    - g. Buy by the cost per serving instead of by weight. The amount of waste in a product costs money; buy accordingly.
    - h. Shop around. Compare prices in various stores to find the lowest prices.
2. Good techniques are to:
    - a. Use coupons. Collect them from the food sections of the newspaper or magazines.
    - b. Use menu planning. Plan a weekly menu from which a shopping list can be made.
    - c. Make a shopping list. Use a list of food items so as to avoid impulse buying.
    - d. Use the weekly food ads to do comparison shopping or take advantage of advertised specials.
    - e. Buy when the price is right. Add these foods to a shopping list when they are in season. Buy foods on sale or in season to get the most savings.

Lesson 22. School Food Service Requirements

An information acquisition lesson designed to help students identify responsibilities of local, state, and federal agencies in determining requirements for school food service programs

Objective

After completing this lesson, the students should be able to describe the responsibilities of local, state, and federal agencies in determining requirements for school food service programs.

Key Facts

The Food and Nutrition Services of the U. S. Department of Agriculture administers the School Nutrition Programs (National School Lunch Program, School Breakfast Program, and the Special Milk Program) on a national basis through the cooperation of the various state departments of education. In California, the Office of Child Nutrition Services, State Department of Education, administers the School Lunch Program. The staff at the state office provides technical assistance, evaluation, and guidance to local school food authorities. The programs are operated at the school district level.

Activities

Procedures	*Materials needed*
1. Ask the students if they ate a lunch that was prepared by the school food service program (today or yesterday). Discuss the students' reasons for using or not using the foods available through the school food service program.	
2. Inform the students that in this lesson they will discuss the federal and state regulations that the food service staff must follow when preparing the student meals each day. Explain that the laws include accounting and reporting systems, as well as nutritional requirements for the menus served. If these requirements are met, the school receives some financial reimbursement for each meal served in the cafeteria from the federal government. A school lunch meeting federal standards is called a "reimbursable lunch." In California the state also contributes a small amount of reimbursement for each free and reduced price meal served. Ask the students if they know which governmental agencies are responsible for the school nutrition programs at the federal and state levels. (*Answers:* U.S. Department of Agriculture and State Department of Education, Office of Child Nutrition Services.)	
3. Tell the students that many of the regulations governing the school lunch programs are written at the federal level; for example, the nutritional guidelines. Distribute "The School Lunch Pattern" handout and review the requirements with the students. These guidelines were written so that student meals will provide approximately one-third of the Recommended Dietary Allowances. (*Note:* For a more in-depth lesson on nutrient needs and school lunches, refer to lessons 2 and 18 in *Choose Well, Be Well: A Curriculum Guide for Junior High School.*) Explain to the students that the required lunch pattern consists of five "components." Ask the students to list them. (*Answers:* (1) meat or meat alternate; (2) and (3) two servings of vegetable or fruit; (4) bread or bread alternate; (5) milk.)	Handout: "The School Lunch Pattern," page J-152

Procedures	*Materials needed*
(*Note:* Two different food items which total at least ¾ cup must be offered to meet the fruit and vegetable requirements. The two food items may consist of 2 vegetables, 2 fruits, or 1 vegetable and 1 fruit.)	
4. Another federal regulation has made it possible for students to be served fewer than the five components and still meet federal requirements for reimbursement. This new regulation is called "Offer versus Serve" and is presently mandated by federal regulation that all high schools must include the Offer versus Serve system in their lunch service. ("Offer Versus Serve" is voluntary at other grade levels.)	
Using the transparency "Offer Versus Serve Requirements," discuss the requirements of this regulation with the students. Ask the students to discuss the advantages and disadvantages of this federal regulation. (For example, advantage—less food waste; disadvantage—decrease in nutrient contribution of lunch meal.)	Transparency Master: "Offer Versus Serve Requirements," page J-153
Ask the students what the responsibilities of the federal, state, and local agencies are as a result of the Offer versus Serve regulation (*Answer:* Federal agency defines and writes the regulation. State agency informs the local school districts about the law, providing guidance and technical assistance. The state agency also checks what law is being enforced and followed. The local agency informs students, parents, and school staff that the law is in effect, implements the regulation (in this case Offer Versus Serve Requirements) and makes certain the students understand their choices.)	
5. Inform the students that another federal regulation mandates that school district staff must involve parents and students in the school lunch program. Such activities include planning menus, improving the eating environment, and promoting school nutrition programs. One way in which students can be involved is by forming a Youth Advisory Council (YAC) to work with the school food service programs. The YACs are sponsored by the American School Food Service Association and offer students a chance to participate in school nutrition programs by working with parents, teachers, food service personnel, and other school staff. Further information about forming Youth Advisory Councils can be found in Appendix H.	Youth Advisory Council, Appendix H
Conduct a group discussion or organize a class debate about the advantages and disadvantages of state and federal regulations regarding the sale of food on school grounds. Use the information found in the handout "State and Federal Regulations for School Sales." If time permits, organize mock hearings. Select students to represent staff from federal and state agencies, and invite students to present testimony regarding their opinions about the federal and state regulations or propose changes that they would like to recommend.	Handout: "State and Federal Regulations for School Sales," page J-154

Evaluation

Ask each student to select one of the federal regulations discussed in class and in a brief paragraph describe the regulation and what staff at the federal, state, and local levels do to enforce the regulations. Review and evaluate paragraphs for accuracy. (For example, federal staff defines and writes regulations, state staff provides guidance and technical assistance, and local agency implements, evaluates, and makes sure students, teachers, and school staff are aware of the regulations.)

Food Service Involvement

1. Invite a member of the food service staff to assist you in presenting this lesson.
2. Invite a food service staff member to bring in state and federal policy handbooks, menu planning guides, and food buying guides to show to the students.
3. Use school menus to demonstrate how regulations regarding the school lunch patterns are met.
4. Work with the class and food service staff to prepare a questionnaire to determine the student body's opinion of the Offer Versus Serve system.
5. Arrange for interested students to meet with the school food service staff to discuss the formation of a Youth Advisory Council. (Refer to Appendix H.)

Lesson 23. Universal Product Code

An open-ended discussion lesson through which students have an opportunity to share ideas, opinions, and feelings about the Universal Product Code

Procedures	*Materials needed*
Discussion Sequence	
1. Inform the students that the purpose of the lesson is to explore their feelings about changes in pricing systems at supermarkets.	
2. Tell the students that you will give them some information about a new pricing system called the Universal Product Code. They will have an opportunity to share ideas afterward.	
3. Distribute the "Universal Product Code" handout and show examples of food products that have a UPC marking. Ask the students to read the information sheet and look at the food items.	Handout: "Universal Product Code," page J-157 Food products with UPC markings
4. Ask the students to think of reasons for and against putting the prices on each item. Present the discussion question "Do you think each item should have the price marked on it? Why or why not?"	
5. Present the discussion rules outlined in the Introduction, page 5.	
6. Restate the discussion question, "Do you think each item should have the price marked on it? Why or why not?"	
7. Conduct the discussion.	

Lesson 24. Values About Merchandising Techniques

***A values awareness lesson** through which students have an opportunity to explore their values about the merchandising of food*

Procedures	*Materials needed*
Activity Sequence	
1. Tell the students that the purpose of this lesson is to help them explore their values about merchandising techniques used by supermarkets.	
2. Hand out the story "A Not So Super Market." Ask the students to read the story. Tell them the story is a device to get them to think about possible merchandising techniques used by food stores. Tell them to be prepared to discuss the story when they have finished reading. Ask them to look for ways in which the supermarket's merchandising techniques affected the people in the story.	Handout: "A Not So Super Market," page J-158
3. After the students have read the story, ask them to respond to the question, "What were some of the ways that placement of food or other items in the supermarket affected Sara's shopping trip?"	
4. List the students' responses on the chalkboard. Possible answers include an Easter display directly opposite the entrance to the store; candy, cookies, toys, and so on at children's eye level; gum magazines, other impulse-buying items at the check-out counter; hard-to-find advertised specials; and coupons for high-priced items.	
5. Remind the students that merchandising techniques include (1) methods used by stores to advertise their product; and (2) placement of products in the stores to increase chances that people will buy them. Merchandising techniques may be designed to encourage consumers to buy a new product and to continue to do so in the future, to buy a product in which the store is overstocked, to buy a more expensive product, and so on. Although the merchandising techniques all seemed to have a negative effect on Sara, merchandising techniques can have positive effects when stores have good, low-priced specials which are easy to find.	
6. Hand out the work sheet "Supermarket Merchandising Techniques." Have the students read the techniques listed. After they have read them one at a time, the students should indicate in the appropriate box on the work sheet whether they do not care if a supermarket uses that technique, whether they like it, or whether they object to it. Point out that "Do Like" means that they feel it is all right for a supermarket to use that technique; "Do Not Care" means it does not bother them; and "Do Not Like" means they do not like it and that they feel it is wrong for a supermarket to use that technique.	Handout: "Supermarket Merchandising Techniques," page J-159 Work Sheet: "Supermarket Merchandising Techniques," page J-160
7. After all of the students have completed the work sheet, ask them to review all of the items they checked "Do Not Like." Of all of these items, they are to star one or two that they feel most strongly about and that really bothers them the most.	
8. Invite some students to share the item they starred. Also invite them to share why they feel so strongly about that item. Review each item to determine how many students checked each one. (In this way the students can relate their thinking with the thinking of others in the class.)	

Procedures	Materials needed
9. Distribute the work sheet, "Values About Supermarket Merchandising Techniques." Explain to the students that this work sheet will help them relate the value judgment they made to one of their values about merchandising techniques.	Work Sheet: "Values About Supermarket Merchandising Techniques," page J-161
10. Direct the students to locate and circle on the "Values" work sheet the number of the item they starred on the "Supermarket Merchandising Techniques" work sheet.	
11. When reading the phrase associated with the number they circled on the "Values" work sheet, students can construct a value statement dealing with one of their values about supermarket merchandising techniques. Model this by reading the stem (underlined on the "Values About Supermarket Merchandising Techniques" work sheet) and phrase number 8 as an example: "One of my values about supermarket merchandising techniques is that cost-saving products are placed at eye level rather than on bottom shelves."	
12. Have the students develop a value statement about supermarket merchandising techniques, and invite some of the students to read their value statements. (If any of the students have starred more than one of the items on the "Supermarket Merchandising Techniques" work sheet, invite them to read a second value statement, if time permits.)	
13. Conclude the activity by pointing out that they have had the opportunity to become aware of some of their values about supermarket merchandising techniques. Because of the nature of the activity, they were limited to looking at and considering ten values and to determining whether any of those values represented their values about the topic. Time permitting, invite students to commment about other things they might like or not like about supermarket merchandising techniques. Then, after each student reports, invite the class to formulate a value statement in relation to the judgment just made. They should use the stem provided on the "Values" work sheet: "One of my values about supermarket merchandising techniques is that . . . ."	

Lesson 25. Food Market Values

A values awareness lesson designed to help students explore their values about food markets

Activities

Procedures	*Materials needed*
1. Inform the students that the purpose of this lesson is to help them become aware of some of their values about food markets and the effects of those values on their decisions about where to shop.	
2. Present the following hypothetical situation to the students: "You are an adult with a family. You have just moved to a new city. Being unfamiliar with the area, you ask your new neighbors about the grocery stores in the neighborhood." Tell the students that the work sheets they will receive list the information obtained from their neighbors about the nearby supermarkets.	
3. Distribute the work sheet "Which Market Do You Choose?" Have the students label a piece of paper "Reasons for Selecting a Grocery Store."	Work Sheet: "Which Market Do You Choose?" pages J-162 through J-164
4. Explain to the students that they will have approximately five minutes to read the information about markets A, B, and C. On the basis of this information, they are to decide at which market they will shop. They will indicate their selections by making a check mark by market A, B, or C.	
5. When the students have made their selections, poll the class to find out who chose markets A, B, and C. Do not make any direct or indirect value judgments about their selections.	
6. Ask the students to look at the description for the market they chose and star those things about the market that were the most important to them, things that made them decide to shop there. (For example: Market A is two blocks from the house). Inform the students that the things they have starred are clues to their values about markets.	
7. Invite some of the students who wish to do so to identify the market they chose and to share their main reasons for choosing it. Invite several students to respond; ideally, some students selected Market A, some selected Market B, and some selected Market C.	
8. Conclude the activity by directing the students' attention to the incomplete value statement about grocery stores on the bottom of their work sheets. Ask the students to complete their value statement by referring to the work sheet and writing in the values indicated for three of their starred reasons.	
9. Invite a few students to share their value statements. Point out to the students that people's values about markets affect their decisions about where to shop. Because different people have different values about markets, their choices of markets differ.	

Lesson 26. Pesticides

An information acquisition lesson designed to help students identify one reason for the use of pesticides and one reason against the use of pesticides

Objective

After completing this lesson, the students should be able to list one reason for using pesticides and one reason for not using pesticides.

Key Facts

An abundant food supply has resulted from advances in agricultural production and food processing. Some of the advantages that technology has produced are greater crop yields; faster growth rates of farm animals; improved appearance, flavor, and nutrient composition of foods; protection from food-borne illnesses; and longer shelf-life. These improvements have come about through the use of new varieties of plants, improved breeds of animals, and the use of fertilizers, pesticides, and food additives.

Pesticides are chemicals used to fight insects and diseases that attack crops. The use of pesticides increases crop yield, since less is lost to damage and disease. This decreased loss is important because of the increasing population that needs to be fed and also to keep costs of farm products down. However, there are costs to society from these benefits.

Some broad-spectrum pesticides kill helpful as well as harmful insects. Other pesticides leave residues on food which may be hazardous to human health. Furthermore, while an insect or disease may be controlled by one pesticide, nature is busy developing a new, more resistant strain of insect or disease.

Pesticides developed to kill the new strains are more potent than older pesticides and are potentially more dangerous to humans. Because of these risks, the United States Department of Agriculture is promoting an integrated insect and disease control program to reduce the use of pesticides. This program involves using broad-spectrum pesticides only when absolutely necessary and relying more on biological control methods, such as preserving natural predators of insects and improving plant resistance to disease.

In light of all the media coverage regarding pesticides and additives, some people believe that *organic* and *natural* foods are preferable to foods grown or processed with chemical fertilizers, pesticides, or additives. Organic foods are usually defined as foods grown without the use of chemical fertilizers or pesticides, while natural foods are foods without additives and with a minimum of processing. Although there are some valid ecological and philosophical reasons to favor natural and organic foods, there is no evidence that they are more nutritious than foods grown with chemical fertilizers and pesticides.

In scientific terms the word *organic* simply means that the compound contains carbon atoms. All food products from plant and animal sources are organic in that they contain carbon. The consumer needs to be aware that there is currently in California a legal definition for the term *organic* and that the use of this word on a label should mean that the product has been grown or raised organically (without synthetic fertilizers, pesticides, chemicals, or drugs) and is free of synthetic additives. There is no federal definition of organic and no legal definition of natural, so that labels claiming a product to be natural must be critically examined.

Glossary

Biological control—Use of natural enemies to regulate pest populations.

Cultural control—Control of pests by methods such as plowing under of crop residues, pruning, and destruction of infected tree branches, crop rotation, and so forth.

Ecosystem--A complex of the ecological community and environment forming a functioning unit in nature.

Host—An organism that serves as a food source for a parasite or predator.

Integrated control—Management of pest populations using natural mortality factors in conjunction with knowledge of insect life cycle to arrest development of pests.

Natural control—Use of physical and biological factors in the environment to control pests.

Natural enemy—An organism that causes the premature death of another organism.

Nonpersistent pesticide—A chemical that breaks down in the ecosystem into nontoxic materials fairly quickly. These pesticides can be highly poisonous initially.

Parasite—A small organism that lives and feeds on a larger host organism.

Persistent pesticide—A chemical used to kill crop pests that remains in the ecosystem with little change for many years.

Pest—An organism that has potential for harming the human being's food supply.

Pesticide resistance—A condition that results when pests are exposed repeatedly to chemical pesticides and develop a genetically selected tolerance to pesticides.

Predator—An insect or animal that feeds on other insects or animals that are either smaller or weaker than itself.

Activities

Procedures	*Materials needed*
1. Show the students the unlabeled "pest control" transparency that illustrates four types of pest control. Ask the students, "What do these four items have in common?" Give the students time to respond. Write their responses on the chalkboard and guide them to the correct response. (*Answer:* They are all methods of pest control.)	Unlabeled Transparency, page J-165
Write the word "pesticide" on the chalkboard. Ask the students to define the word. After the students have responded, display the "pesticide" transparency on the overhead projector.	Transparency Master: "Pesticide," page J-166
Read the definition.	
This may be used as a student handout, if desired.	
Return the "Pest Control" transparency to the overhead projector. Place the "Pest Control (Labeled)" transparency over it. Ask a student volunteer to read the supplemental information on the transparency. Explain to the students that there are many different kinds of pest controls, some of which are advantageous and others which are not.	Transparency Master: "Pest Control (Labeled)," page J-167
2. Write the terms *persistent pesticide* and *nonpersistent pesticide* on the chalkboard. Ask the students to volunteer to define these terms. Give the students time to respond. Guide the students toward the appropriate definitions. (See Key Facts for definitions.)	
Use the transparency "Biological Pest Control" to outline some characteristics of biological control. Use the transparency "Nonpersistent Pesticides" to outline some general characteristics of this category of pesticide. Finally, use the transparency "Persistent Pesticides" to outline some general characteristics of persistent pesticides.	Transparency Master: "Biological Pest Control," page J-168 Transparency Master: "Nonpersistent Pesticides," page J-169 Transparency Master: "Persistent Pesticides," page J-170
Ask the students to list how the pesticide control methods are similar (protect the food supply) and how the pesticide control methods differ (varying effect on the environment from no toxic effect to great toxicity concern).	
3. Hand out the newspaper article. Ask the students to read it. Explain to the students that this article is just one example of the many news stories about the use of pesticides.	Handout: "Newspaper Article," page J-171
4. Ask the students to write the following words at the top of three sheets of paper (one word per sheet): "positive," "negative," and "alternatives." Ask the students to classify the information discussed so far in class in the proper categories.	

Procedures	Materials needed
Show the transparency, giving positive reasons regarding the use of pesticides. Elaborate on the reasons given on the transparency.	Transparency Master: "Reasons for Use of Pesticides," page J-172
Show the transparency, giving negative reasons regarding the use of pesticides. Elaborate on the reasons given on the transparency.	Transparency Master: "Reasons Against Use of Pesticides," page J-173
Show the transparency, giving alternatives to the use of pesticides. Elaborate on the alternatives given on the transparency. Remind the students to add these reasons to their sheets of paper in the proper categories. The transparencies may be used as handouts, if desired.	Transparency Master: "Alternatives to Use of Pesticides," page J-174
5. Distribute copies of the illustrated scenario "The Pesticide Dilemma." Have the students read it. List on a piece of paper at least one advantage and one disadvantage of using pesticides to control insect pests. Ask the students to volunteer some of the advantages and some of the disadvantages they listed. List responses on the chalkboard. (Some responses might be: advantages—protects the yield of the food crop, keeps the price of wheat down, provides wheat for exportation; disadvantages—may show up as residue in the food supply, may be dangerous or fatal to other members of the ecosystem, may lead to pesticide-resistent insects). Ask the students whether they think the chemical used in the scenario was a persistent pesticide. (Yes.) Why or why not? (It showed up in other places later.)	Handout: "The Pesticide Dilemma," page J-175
6. Read the following plot to the students: Phil Jones is a produce farmer. He is searching for a solution to his crop pest problems. He is concerned about the environment. But he also must make a living. Ask the students to list at least two advantages and two disadvantages of using pesticides from Phil's point of view. Ask students to share their responses.	
7. Distribute the "Pesticide Information Sheet" and the "Effects of Pesticides" work sheet. Ask the students to complete the work sheet using their notes, the handouts, or any resource books available in the room. Discuss the work sheet answers with the students when they have finished. (This could be a homework assignment.)	Handout: "Pesticide Information Sheet," page J-176 Work Sheet: "Effects of Pesticides," page J-177

Evaluation

Distribute the work sheet "Pesticide Problems" on page J-178. Correct and evaluate the students' answers. Discuss the correct answers with students.

Food Service Involvement

1. Contact the food service director and arrange a class visitation to the school district's food storage area. Have the students observe the methods used to avoid contamination of food supplies by insects and rodents.
2. Ask the food service personnel to provide the students with information about accepted methods of food storage to avoid contamination.
3. Ask the food service personnel to share with the students the following resources:
   a. Government regulations for school food service storage.
   b. Approved list of pesticides that can be used in food storage areas.
4. Ask the food service department to contact the Surplus Property Office for a speaker to talk about the regulations governing the storage of commodity foods. Also ask about the problems associated with storage of large quantities of food.

Notes

Answer Key

Effects of Pesticides (page J-177)

1. b, 2. a, 3. c. 4. a, 5. d

Pesticide problem (page J-178)

1. a. pesticide, b. insects, c. fungicide, d. herbicides, e. pests, f. residue, g. food supply, h. predator, i. natural control, j. biological control
2. Nontarget organisms that pesticides can harm are human beings, animals, bees, birds, and fish.
3. If the use of pesticides was banned, our food supply would be affected in the following ways: less quantity of food available, less variety of food available, lower quality of the food that was available.
4. If there were no regulations in the use of pesticides, the results could be overuse of chemicals that could harm people and overuse of chemicals that could harm the environment.
5. Some alternatives to the use of pesticides are raising and using microbes to infect pests; improving plant resistance to pests by genetic transformation; preserving and raising natural predators and parasites that are harmless to humans, animals, and crops but kill pests; developing special viruses for selective infection of insects; and preventing insects and other pests from reproducing by altering their sex lives.
6. Pesticides such as insecticides, rodenticides, fungicides, and herbicides are agents used to kill pests.
7. a. nature control, b. pests, c. pesticide resistance, d. biological control
8. Answers will vary.

Lesson 27. Sanitation Precautions

An information acquisition lesson designed to help students identify reasons for two sanitation precautions that should be followed by food service personnel

Objective

After completing this lesson, the students should be able to identify reasons for two sanitation precautions that should be followed by food service personnel.

Key Facts

Bacteria are microscopic and are found everywhere. Although not all bacteria are harmful, some are harmful to human beings because they cause food spoilage or disease. Disease-causing bacteria can be transmitted through food. If certain bacteria are allowed to multiply in quantity in food, illness can result from the food that is consumed.

Bacteria require food, moisture, and warmth to grow. If these requirements are met, bacteria can divide and multiply very rapidly. Various bacteria have different food needs, but most prefer nonacid foods to acid foods. High protein foods such as milk, eggs, meat, poultry, fish, and shellfish are the most likely breeding places for some bacteria. Slightly acid foods, such as most vegetables, and acid foods, such as fruits, tomatoes, pickles, or foods with added vinegar, lemon juice, or other acid ingredients, are not as well liked by bacteria.

Bacterial growth is possible when temperatures range between 40° and 140° F. (4° and 60° C)—the DANGER ZONE. Food temperatures of 40° to 140° F. (4° to 60° C) are to be avoided other than for short preparation and serving times. Optimum temperatures for bacterial growth are between 60° and 120° F. (16° and 49° C). Many illness-causing bacteria can be killed by heat (212° F. [100° C] or above). Bacteria are not killed by low temperatures, but their growth can be slowed or stopped. Temperatures of 32° to 40° F. (0° to 4° C) prevent bacterial multiplication and are safe for short periods of time.

Four common organisms that cause food illness are clostridium botulinum, salmonella, staphylococcus, and clostridium perfringens.

Botulism is a food-borne illness caused from eating canned foods containing the toxin produced by clostridium botulinum, a bacterium that grows in the absence of air. The organism can grow and produce toxin in sealed jars and canned foods that are improperly processed. This type of food intoxication is rare, but it can be fatal. Safe home canning procedures should be followed using a presssure canner for low-acid foods. Any foods that are home canned and not properly processed or any foods in a container with a bulging lid should be discarded.

Salmonella organisms are found most commonly in raw animal products, such as poultry, eggs, and meat. The organisms multiply at temperatures between 40° and 140° F. (4° and 60° C). Cooling destroys the organism in the food. When large amounts of the organism are eaten, they multiply in the gastrointestinal tract and produce vomiting, diarrhea, abdominal cramps, and fever.

Staphylococcus organisms are most frequently found in the nose, in the throat, on the hair, and on the skin. Anyone who prepares food can unknowingly contaminate food with this organism. When the bacteria multiply, a toxin is produced. This toxin is not destroyed by heat. Custard, ham, meats, gravies, stuffing, and poultry dishes are foods susceptible to staphylococcus organisms.

Clostridium perfringens organisms are found in raw meat, poultry, and foods that are in contact with the soil. Cooked meats, gravies, and poultry dishes are the usual foods contaminated by this organism, which grows in foods not properly refrigerated.

Further information is included in student handouts "Meet the Enemy," "Sanitation Rules Directive," and "Sanitation Precautions."

Activities

Procedures	*Materials needed*
1. Select two groups of three students for role-playing situations. Give each group one plot suggestion for their role playing situation.	Plot Suggestions: Sally's Diner, page J-180 Sammy's Diner, Page J-181

Procedures	Materials needed
Tell the students to raise their hands if they have eaten at a commercial food establishment within the last three days. (Note the number on the chalkboard.) Ask students what they look for when they eat out. List the responses on the chalkboard. Save the responses.	
Tell the students they are to imagine that they will be eating lunch (supper) at one of two nearby diners—Sammy's or Sally's. As they observe the two dining situations, ask them to think about where they would prefer to eat. Have one group role play the Sally's Diner situation. Have the second group role play the Sammy's Diner situation.	
Ask the students to raise their hands if they would prefer to eat at Sally's; do likewise, if they would prefer to eat at Sammy's. Ask students at random to give one reason for their choices. Write the responses on the chalkboard. Compare these responses to those previously listed on the chalkboard.	
2. Inform the students that they are going to be inducted into the "Corps to Wipe Out Food-borne Illness."	
Give the students a "Certificate of Induction" and outline their orders for completion of the assignment: a. "Meet the Enemy." Review the list of bacteria that can cause food-borne illness. b. "Sanitation Rules Directive." Read directive and assume responsibility for its content. c. "Consciousness Campaign." Illustrate one sanitation precaution to be followed by the food service detachment. d. "Dominance Drill." Sort food service practices into safe and unsafe categories. e. "Discharge Document." Test for termination of assignment.	Certificate of Induction, page J-182
Inform the students that they will be dividing into platoons of six students for the duration of their corps assignment. Each platoon should select a platoon leader. Allow the students to divide into platoons and select a platoon leader. The teacher may wish to have the students number off to determine platoon assignments. Explain to the students that after each platoon member completes a required task, the platoon leader will check off the task and initial the check on the member's certificiate of induction.	
3. Use the "Meet the Enemy" overhead transparency to review the names and characteristics of food-borne illness-causing germs. ("Meet the Enemy" can also be used as a student ditto master.)	Transparency: "Meet the Enemy," page J-183
Refer to the second paragraph in Key Facts for a discussion of bacterial growth.	
Use one grain of rice to represent one bacterium. Assuming that conditions are right and the bacterium divides each 15 minutes; at the end of five hours there could be 1,000,000 bacteria. Show the students one kilogram of rice. Explain that it would take about 30 times as much rice to represent the 1,000,000 bacteria if each grain of rice represented one bacterium.	Uncooked rice
Have the platoon leaders check off "Meet the Enemy" box on the induction certificates.	

Procedures	Materials needed
4. Explain to the students that there are sanitary precautions that can be taken to reduce the incidence of food-borne illness. Tell them that some basic guidelines are outlined in the "Sanitation Rules Directive." They are to read carefully the directive and to become familiar with its contents.	"Sanitation Rules Directive," page J-184
Explain to the students that the food service corps detachment has recently received news of a suspected outbreak of food-borne illness. Ask the class members to suggest precautions that could be recommended. Write suggestions on the chalkboard. Correct responses could be similar to those listed on "Sanitation Precautions." Distribute "Sanitation Precautions" to the students.	"Sanitation Precautions," page J-186
Explain to the class that each platoon has been assigned to participate in a "Consciousness Campaign" to promote responsibility for food sanitation and safety. Each platoon will divide into three sets of partners, and each set of partners must design a poster that illustrates a sanitation precaution along with reasons for the precaution. Distribute poster materials. When the posters are complete, provide an area in which they can be displayed.	Poster materials
5. Inform the students that before they are discharged from the corps, they must complete the "Dominance Drill." Distribute the "Dominance Drill" to the students and read the directions.	"Dominance Drill," page J-187
Read each situation to the class. Have the students raise their hands if they considered the situation a safe practice or an unsafe practice. Call on the students to give their rationale. Discuss.	
6. When planning a lesson on microbiology, the following activity may be used to help students to achieve the subject matter objectives.	Sterile agar air plates
While studying airborne bacteria, have the students expose standard sterile agar air plates at various locations on the campus. These locations could include the gym, various classrooms, the library, offices and food service area, and kitchens.	
Have the students compare the air plates after incubation as to the numbers and kinds of bacteria (as determined by colony appearance). Have the students discuss the importance of food service personnel following sanitary precautions, such as washing hands, washing utensils, and wearing hats, hair nets, and aprons to avoid the spread of food-borne diseases, such as streptococcus infections.	
During the study of bacteria, have the students touch sterile agar plates (using standard sterile techniques and controls) with unwashed fingers, soiled kitchen utensils, and hair. Then have the students wash their hands and utensils and touch these to a second set of sterile agar plates. Incubate two to three days and compare the numbers of colonies of bacteria.	Sterile agar plates Work Sheet: "Wash Your Hands," page J-188
Emphasize the importance of food service personnel following sanitary precautions, such as washing hands and utensils and wearing hats, hair nets, and aprons. Note that state laws require these procedures.	
7. When a lesson on design and function is being planned, the following activity may be used to help students to achieve the subject matter objectives.	

Procedures	*Materials needed*
Invite a representative from a large fast food chain to discuss how his or her firm meets sanitation and safety requirements while using creative marketing techniques for uniforms and other wearing apparel. Collect all articles and apparel related to sanitation (i.e., hair nets, hats, and aprons) that are used in the school food preparation program. Discuss how and why these articles are used in a food program and what might be done to improve the looks and function of these items. Have the students redesign these items to make them more functional as well as attractive.	

Evaluation

Distribute "Discharge Document" on page I-189. Discuss the correct answers.

Food Service Involvement

Consult the food service supervisor about visiting the cafeteria to observe sanitation and safety procedures practiced by food service personnel. Plan a field trip. Return to the classroom and list sanitation precautions observed.

Notes

Answer Key

Discharge Document (page J-189)

1.c. Because of the staphylococcus organisms potentially present in a sore, no contact should be made with food or cooking utensils.

2.c. Because of the salmonella organisms potentially present in raw chicken, the cutting board and knife should be thoroughly disinfected immediately after use.

3.c. To avoid growth of salmonella organisms, refrigeration is necessary. Foods such as turkey can only be held for short periods of time on a steam table.

Lesson 28. Food Processing

An information acquisition lesson designed to help students specify one advantage and one disadvantage of food processing

Objective

After completing this lesson, the students should be able to list one advantage and one disadvantage of food processing.

Key Facts

Processed food is any food that has been subjected to a process such as enrichment, refining, fortification, mixing, cooking, canning, freezing, drying, alteration in texture, or alteration in keeping quality. It includes items such as convenience foods, engineered foods, fabricated foods, and imitation foods.

Convenience foods are partially or fully prepared products which eliminate some of the preliminary preparation required for preparing, cooking, or serving the food. The foods are prepackaged or packaged in such a way that they are easy to cook and serve at home. They are already cooked or otherwise processed before reaching market. Some examples are bread, ready-to-serve breakfast cereals, instant oatmeal, prepared meals and desserts, frozen foods, canned foods, concentrated juices, and TV dinners.

Engineered foods are subjected to a complex technical process, such as extraction of certain components. A good example is decaffeinated coffee.

Fabricated foods are made from highly processed ingredients or ingredients that have been purified and mixed in the laboratory. Some examples are substitute meat burgers made from textured vegetable protein and orange-flavored-drink crystals made from sugar, additives, and colorings.

Imitation foods are a substitute for and resemble another food but are nutritionally inferior to the food imitated. Nutritionally inferior is defined as a reduction in the content of an essential vitamin or mineral or of protein that amounts to 10 percent or more of the U.S. RDA. Some examples are imitation cheese and imitation mayonnaise. The law requires that the term *imitation* appear on the label.

Food processing often includes the addition of various additives, which fall into one of the following four categories:

Additives to maintain or improve nutritional value. Many foods are fortified with vitamins and minerals that might otherwise be lacking in a person's diet or that have been destroyed or lost through processing. Common nutritional additives include vitamin D in milk, vitamins A and D in skim milk and nonfat dry milk, vitamin A in margarine, vitamin C in fruit drinks, and iodine in table salt. Breads and cereals are enriched with B vitamins and iron lost or destroyed during the milling and processing of the grains.

Additives to maintain freshness. Foods last as long as they do on the shelf because of additives that retard spoilage, preserve natural color and flavor, and keep fats and oils from turning rancid. These include "antioxidants" that control discoloration of foods caused by oxidation and protect oil-containing foods from rancidity and "antimicrobial preservatives" that inhibit the growth of mold, bacteria, and yeast that can spoil food.

Additives that help in processing and preparation. This category includes emulsifiers that permit the dispersion of tiny particles or globules of one liquid in another and stabilizers and thickeners that are used to achieve the smooth, uniform textures of many foods. Some additives in this category affect cooking and baking results, control acidity or alkalinity, retain moisture, and prevent caking and lumping.

Additives that help to make food more appealing. In this category food colors, both natural and artificial, are used to restore the natural colors to many processed foods or create pleasant colors for manufactured food products. Natural and artificial flavors and flavor enhancers are used to create new tastes or improve the taste of foods. Some of the most common flavor enhancers are salt, sugar, and corn syrup. These three, plus citric acid, baking soda, vegetable colors, mustard, and pepper, account for more than 98 percent, by weight, of all food additives used in this country.

See the "Food Additives Glossary," pages J-190 through J-194, for more information on specific additives.

Activities

Procedures	*Materials needed*
1. Show the students an empty carton of low-fat or nonfat milk. Ask them to list all the processes used from the time the milk was taken from the cow to the time the milk was put into the carton. (*Answers:* cooling, pasteurization, cooling, removing butterfat, homogenization if milk is low fat, adding vitamin A, adding vitamin D, and adding nonfat milk solids. Be sure to check the label for added ingredients.)	Empty carton of low fat or nonfat milk
Explain pasteurization and homogenization. Pasteurization is the process of heating milk to a certain temperature for a certain length of time to kill harmful bacteria. Usually, milk is heated to a temperature of 142° to 145° F. (61° to 63° C) for 30 minutes. Homogenization is the process by which the fat globules are broken down into smaller particles that are dispersed throughout the milk. This process prevents the cream from rising to the top.	
Ask the students if the nutritional content of the milk has changed as a result of the processing. (Yes, there is less fat and more vitamin A and vitamin D.)	
Ask the students if they think processed milk is a good product. Ask them to give reasons for their answer.	
2. On the chalkboard or overhead transparency, list, with student help, all the different food products that result from the processing of milk. Begin the list with raw milk, the only unprocessed milk product. Mention that to be safe, raw milk that is certified should be used. Certified raw milk is milk that comes from cows that are "certified" to be free of disease. Foods to include in the list are pasteurized milk, homogenized milk, nonfat milk, low-fat milk, nonfat dry milk, evaporated milk, evaportated nonfat milk, condensed milk, buttermilk, chocolate milk, sterilized milk (sold in boxes), dry buttermilk, yogurt, flavored yogurt, frozen yogurt, all kinds of cheese, cheese food, imitation cheese, butter, ice cream and ice cream confections, and frozen ice milk. If possible, have samples of some of these milk products for students to taste.	
As an optional activity, have the students research the processes necessary to produce these products.	
3. Give each student a copy of the work sheet, "Food Processing Techniques." Ask the students to fill in their charts during the discussion. Ask the students to name as many different food processing techniques as they can think of. Make a list on the chalkboard as the students respond.	Work Sheet: "Food Processing Techniques," page J-195 Handout: "Food Processing Techniques Key," page J-196
Add any techniques not on the list. Ask the students to think of food examples which have been processed in these ways. List these on the chalkboard. Ask the students what the advantages and disadvantages are of each of the methods of processing listed. Add this information to the chalkboard. (See "Food Processing Techniques Key.")	
4. Distribute to each student a copy of the work sheet "Food Diary." Ask them to write down everything they eat for the next two days. They do not need to list the amount of each food they eat or how many times they eat it; only list the foods eaten.	Work Sheet: "Food Diary," page J-197

Procedures	Materials needed
After the students have completed their food diaries, ask them to put a P next to any food they ate which was processed. Remind them that cooking a food is a method of processing. Ask the students how many of them ate at least one processed food, five processed foods, or ten processed foods. Ask the student to name the number of processed foods they ate in the two days. Ask them if they could have managed for two days without eating any processed foods? Would it have been easy? Could they have done it nutritionally? Ask the students to name ways processed foods contribute to today's life-style. Ask the students to list advantages and disadvantages of processed foods.	
5. Give each student a copy of the "Grocery Store" work sheet and ask them to choose a fruit or vegetable for purposes of research. Take students to the grocery store during class time or ask them to complete the work sheet as a homework assignment. When the grocery store charts are complete, discuss the students' conclusions.	Work Sheet: "Grocery Store," page J-198
6. Distribute food labels from processed foods.	Food labels from processed foods, one for each student
Ask the students to write down all the ingredients contained in the products. Ask the students: "Do you know what all the ingredients are? Could you determine why each ingredient is there?" Distribute the fact sheet, "Food Additives Glossary." Ask students to list the additives found on their labels and to list what they are used for. Ask them if they consider those particular additives to be necessary or unnecessary and why. Ask students if they would be willing to eat a less colorful food if they knew they would be eating fewer additives? Ask them if they think it is important to know what additives are present in different foods and what those additives are there for before determining which food to purchase. Introduce the concept of risk/benefit. Explain to the students that many medicines, although providing many life-enriching and life-saving advantages, may have undesirable side effects. A doctor or patient needs to determine whether the benefits from taking that medicine outweigh the risks. Ask students to discuss this concept as it applies to food additives.	Fact Sheet, "Food Additives Glossary," pages J-190 through J-194
7. Prior to class prepare "Food Processing Index Cards." Scramble the cards. During class give each student a piece of card. Students will form groups of four by matching their puzzle pieces correctly.	"Food Processing Index Cards," pages J-199 through J-201
Number each group from one to six. Distribute the work sheet "Food Processing Problems," and have each group answer the problem that corresponds to their group number. If you have more than six groups, repeat the numbers and have more than one group work on the same problem.	Work Sheet: "Food Processing Problems," page J-202
8. Have students complete the work sheet "Food Processing."	Work Sheet: "Food Processing," page J-203
9. Ask students to prepare an informational poster, fact sheet or brochure about some aspect of food processing. Display the completed student projects around the classroom or school.	
10. Have the students complete the "Word Scramble."	Work Sheet: "Word Scramble," page J-204
11. Have the students prepare a research project about how a specific food item is processed from raw ingredients to finished product. Indicate why each process is used, how much each process costs, and the benefits and disadvantages of the process.	
Suggested references include a discussion with the food processor, encyclopedia, and library. Students may work individually, in pairs, or in teams.	

Procedures	Materials needed
12. Invite a food processing plant manager and a food specialist to come to class to discuss the advantages and disadvantages of food processing.	
13. Ask the students to sample one food, such as pineapple, which has been processed fresh, frozen, canned, and dried. Invite the food service manager to class to discuss food processing and why some foods served in the school lunch are processed.	
14. Examine newspaper supermarket ads for clues to processing costs. Ask the students to compare the cost of frozen processed vegetables with that of fresh vegetables. Ask the students to note if nutritional values are advertised. Ask the students to note if sales are advertised on processed foods. Ask them to compare the sales of processed foods with nonprocessed items, such as fresh fruits, vegetables, and meats.	Newspaper supermarket ads
15. When planning a lesson on the industrial revolution or modern society, the following activity may be used to help the students achieve the subject matter objective. Ask the students to contribute their ideas on the following questions: a. What are some of the past inventions in the food industry? b. How have these inventions helped or hurt human beings? c. How do food production methods in the underdeveloped countries compare with those in the U.S.? d. How much of the consumer's dollar goes to the food processors?	

Evaluation

Distribute the work sheet "Processed Foods," page J-205. Correct and evaluate the students' answers. Discuss the correct answers with the students.

Food Service Involvement

1. Invite cafeteria personnel to share with the class some of the processed foods used at the school. Possible choices include canned goods, preformed or precooked hamburger patties, enchiladas, precooked chicken, turkey rolls, bologna, and corn dogs.
2. Discuss the advantages and disadvantages of the processed foods. Possible advantages include the time element in preparation, ease of storage, and uniformity in size and taste. Possible disadvantages include lack of individuality, possible loss of some nutrients, and limited variety.
3. Have the food service personnel demonstrate a comparison of fresh squeezed orange juice, canned, and frozen juice. Compare cost, taste, and ease of preparation.

Notes

Answer Key

Food Processing Problems (page J-202)

1. Dried; lighter to carry
2. Unprocessed foods, because processing almost always increases the cost
3. Low-fat foods in which the processing has removed high caloric fats
4. Can, dry, or freeze the apples
5. Canned and frozen foods
6. Convenience foods, canned and frozen foods; prepackaged frozen meals; on the weekends, could prepare food for the week and freeze for use during the week; could prepare "double batches" to freeze and eat later

Food Processing (page J-203)

Answers will vary. Use "Food Processing Techniques Key," page J-196, as a guide.

Word Scramble (page J-204)

1. Variety
2. Storage
3. Convenient
4. Cost
5. Nutrients
6. Additives
7. Necessary

Processed Foods (page J-205)

1. Any food that has been subjected to a process. such as enrichment, refining, fortification, mixing, cooking, drying, and so on.
2. Eliminate some of the preliminary preparation required for preparing, cooking, or serving foods.
3. Advantages: increased food safety, increased convenience, increased storage time, decreased weight, increased nutrients, better taste.
4. Disadvantages: decreased nutrients, increased cost, increase in unnecessary additives, decreased taste.

5., 6., 7., and 8. Answers will vary.

Lesson 29. Use of Pesticides

An open-ended discussion lesson through which students have an opportunity to share ideas, opinions, and feelings about the use of pesticides

Procedures	Materials needed
Discussion Sequence	
1. Inform the students that the purpose of this lesson is to provide an opportunity for them to discuss the use of pesticides in commercial food production.	
2. Inform the students that pesticides include herbicides (chemicals intended to destroy certain weeds, such as weed killers used around the home), insecticides (chemicals intended to destroy insects, such as sprays used around the home to destroy ants or spiders), and fungicides (chemicals intended to stop the growth of fungus).	
3. Show the student "Transparency 1," which depicts an airplane dusting crops versus people squashing bugs with their shoes. Pesticides are a convenient, relatively inexpensive way to keep insects from destroying all kinds of food crops. It would be impossible to control the infestation of insects in large commercial food production establishments without the use of pesticides.	Transparency Master: "Transparency 1," page J-206
4. Show the students "Transparency 2," which depicts a teenager enjoying an apple versus a teenager finding a worm in an apple. The use of pesticides provides insect-free fruits and vegetables for people to enjoy.	Transparency Master: "Transparency 2," page J-207
5. Show the students "Transparency 3," which depicts a full bin of corn priced at 10 cents an ear versus half a bin of corn priced at 50 cents an ear. The use of pesticides increases a farmer's production per acre and thereby reduces the price of that product on the market.	Transparency Master: "Transparency 3," page J-208
6. Show the students "Transparency 4," which depicts dead fish on the bank of a stream versus a stream and fisherman with jumping fish. The improper use of pesticides or the use of untested pesticides can cause environmental problems. Through runoff from a farmer's fields, stream water can become contaminated and kill the fish.	Transparency Master: "Transparency 4," page J-209
7. Show the students "Transparency 5," which depicts healthy children playing versus lethargic children being cared for. Pesticide runoff can also contaminate a community's drinking water supply and affect the health of children who drink the contaminated water.	Transparency Master: "Transparency 5," page J-210
8. Conclude the use of the transparencies by noting that there are always trade-offs. On the one hand, the use of pesticides can have a very positive effect on the production of food; but on the other hand, the use of certain pesticides or the improper use of other pesticides can have a negative effect both on the environment and on people.	
9. Indicate that you are now going to provide an opportunity for the students to discuss their own feelings about the use of pesticides by agribusiness.	
10. Present the following question for the discussion. (The discussion question may be written on the chalkboard if you wish.) "What should be done about the use of pesticides by agribusiness?"	
11. Present the discussion rules outlined in the Introduction, page 5.	

Procedures	Materials needed
12. Restate the discussion question: "What should be done about the use of pesticides by agribusiness?" 13. Conduct the discussion.	

Lesson 30. Food Additives

An open-ended discussion lesson through which students have an opportunity to share ideas, opinions, and feelings about food additives

Procedures	*Materials needed*
Discussion Sequence The Day Before the Lesson: 1. Select four students to serve as presenters. These students should be willing to speak in front of the class. Divide them into two teams of two students each. One team will be responsible for presenting arguments in favor of the use of additives in foods; the other team will present arguments against the use of additives in foods. They are not to debate; no side can win, only provide background information for a class discussion.	
2. Give the members of each team an information sheet at least one day before they are to present the information to the class.	Information Sheet: "Arguments in Favor of the Use of Additives," page J-211
3. Inform the teams when they will be presenting their arguments in class and that their presentation should run no longer than five minutes. Allow the remainder of the class period for them to prepare their presentation or assign it as a homework assignment.	Information Sheet: "Arguments Against the use of Food Additives," page J-212
The Day of the Lesson: 1. Tell the class that the purpose of the lesson is to give them a chance to discuss their ideas, opinions, and feelings about the use of additives in foods. 2. Tell the class that they will be listening to arguments in favor of and against the use of food additives so that they can prepare for the discussion. They are only to listen at this time. Later they will have an opportunity to express their feelings. 3. Ask the teams to make their presentations, and caution them to take no more than five minutes each. 4. Present the discussion question, which you may want to write on the chalkboard: "How do you feel about food manufacturers and processors putting chemical additives in their products?" 5. Present the discussion rules outlined in the Introduction, page 5. 6. Restate the discussion question: "How do you feel about food manufacturers and processors putting chemical additives in their products?" 7. Conduct the discussion.	

TOPIC: FOOD HANDLING

Lesson 31. Values About Food Handlers

A values awareness lesson designed to help students explore their values about food handlers

Procedures

At the beginning of the class period or the day before the lesson, call aside six students who you feel are good charade players. Give each of these students a situation card and explain that they will pantomime for the class the situation given on their card. Allow the students three minutes to plan their pantomime, possibly while the roll is taken.

Activity Sequence

1. Inform the students that the purpose of this lesson is to help them become more aware of their values about food handlers. Tell the students that to become aware of their own values about food handlers, they will focus on some practices of food handlers which are considered unsafe.
2. Explain to the students that they will be playing a charade-type game. Tell the students that six of their classmates, representing food handlers, will demonstrate unsafe situations. Inform the students that their job will be to determine the unsafe procedure in each situation pantomimed.
3. Invite the first student food handler to pantomime his or her situation for the class. Instruct the students to play charades until they correctly identify the unsafe procedure.
4. Put the transparency on the overhead projector and fill in the unsafe procedure for the first situation. For example:

Situation	Unsafe procedure
1	Prepare a meal with unkept hair.

5. Pass out work sheets to the students and instruct them to fill in their work sheet as you have done on the transparency.
6. Invite the second student food handler to pantomime his or her situation. When the class has identified the unsafe procedure, instruct the students to record this practice on their work sheets as they did in the first situation.
7. Repeat this sequence with each pantomime until the students have a list of six unsafe procedures on their work sheets.
8. Ask the students if they feel that their list is complete. If not, ask them to share other unsafe practices with the class. Tell the students to add these to their lists.
9. Inform the students that to become aware of their values about food handlers, they need to focus on positive practices. Tell the students to determine the corresponding positive procedure for each negative procedure on their list. Instruct them to write the positive procedures in the column titled "Safe procedure." Help them list these on their paper by giving this example on the transparency.

Situation	Unsafe procedure	Safe procedure
1	Prepare a meal with unkept hair.	Tie the hair back or use a hair net while preparing food. Keep the hands out of the hair.

Materials needed

Situation Cards, page J-213

Work Sheet and Transparency Master: "Factors Important to You About Food Handlers," page J-214

Procedures	*Materials needed*

10. Tell the students to complete their list of correct procedures. Monitor this process by going from student to student and helping as necessary.
11. When the students have completed their lists, invite them to share orally some of the reasons that safe procedures are important to them.
12. Focus student attention on the work sheet column "Reasons." Demonstrate the completion of this column by showing them the first example on the transparency.

Situation	Unsafe procedure	Safe procedures	Reasons
1	Prepare a meal with unkept hair.	Tie the hair back or use a hair net while preparing food. Keep the hands out of the hair.	Keep the hair out of the food.

13. Instruct the students to complete their list by writing their corresponding reasons next to each safe practice. Allow five minutes for this to be done.
14. Ask the students if they had any problems listing the reasons next to the safe procedures. If they need help, ask other students to share their reasons orally. Allow the students to determine their own reasons. Do not share your reasons with the students.
15. Inform the students that these reasons are clues to their values about food handlers.
16. Instruct the students to cross out the word "Reasons" and replace it with the word "Values" on their work sheets. Demonstrate this for them on the transparency.
17. Ask the students to complete the two values statements at the bottom of the work sheet, using their own values about food handlers. Instruct them to pick two of the situations they feel are the most important to them. Complete the values statement for your first example:

    "One of the things which I value about food handlers is that they keep their hair out of the food."

18. Invite the students to share their values about food handlers orally with the class, using the value statement they have written.
19. Point out to the students that different people have different values about food handlers.

Curriculum Participants

The individuals who helped to develop and/or field test the lessons in this curriculum are as follows:

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Appendix B

National School Lunch Program Background and Philosophy

Feeding children in schools began in the United States in the 1800s as charity programs. The public school system eventually took over these charity programs and expanded them so that they no longer served only the poor children. In the 1930s, school feeding received assistance from the surplus foods distributed by the U.S. Department of Agriculture, but the school feeding program was still operating on a temporary basis.

In 1946 Congress initiated the National School Lunch Program as a measure of national security to safeguard the health and well-being of the nation's children. It is significant that the congressional testimony preceding the passage of the Act, and the Act itself, clearly indicate that its purpose is to make available low cost, nutritious school lunches to all schoolchildren.

In spite of this goal, it became increasingly evident that the National School Lunch Program was not reaching a large number of children. The Act was amended in 1962 to authorize increased reimbursement to schools drawing attendance from particularly needy areas. However, federal funds were not provided for this special assistance program until 1965, and then only in a very limited amount.

In 1966 testimony before several congressional committees indicated that there were many children who qualified for, but were not receiving, a free lunch or one at a reduced price. Almost one million of these children were among nine million who were attending schools without food service of any type. This testimony led to the passage of the Child Nutrition Act of 1966. This Act authorized funds for the establishment of breakfast programs in schools drawing attendance from areas in which poor economic conditions exist and for the purchase of equipment needed to initiate or expand school food service. The Act also extended the National School Lunch Program to preschool children. In 1977 Congress further authorized funds for nutrition education to provide instruction for students, teachers, and food service personnel. Thus, the original National School Lunch Program should more properly be called the Child Nutrition Program, since it provides for improved nutrition and, very importantly, nutrition education for our children and youth. It appears that Congress, the general public, and educators are becoming increasingly aware of the fact that you can't teach a hungry child.

The school food service program is increasing in scope, size, complexity, and importance. Management of the program involves every phase of school business management, nutrition, and merchandising. The person who can successfully operate a school food service program has achieved a high level of skill in many areas.

Appendix C

Nutrient Composition Table

"The Nutrient Composition Table" contains information about the nutrient content of most foods in common use in the United States. Processed and prepared foods as well as foods in the natural state are included. The information about these foods is listed for portions that are commonly used.

The nutrient content includes the amount of energy, protein, fat, and carbohydrate contained in each food. Also included are minerals and vitamins. These tables show the amounts of the following kinds of minerals each food contains: calcium, phosphorus, magnesium, sodium, potassium, zinc, copper, and iron. Amounts are shown for the following kinds of vitamins: vitamin A, thiamin, niacin, vitamin B-6, pantothenic acid, folacin, vitamin B-12, and vitamin C.[1]

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[1] From *Bogert's Nutrition and Physical Fitness* by George M. Briggs and Doris H. Calloway. Copyright © 1979 by W. B. Saunders Company. Reprinted by permission of Holt, Rinehart and Winston, CBS College Publishing, a division of CBS, Inc. This material is from Table 2, pages A-12 through A-28.

Nutrient Composition Table

Food	Weight g	Approximate Measure	Energy Kcal	Protein g	Fat g	Total Carbohydrate g	Minerals								Vitamins								
							Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Almonds, chopped	15	12–15 nuts, 2 tbsp	90	3.0	8.0	3	35	75	40	1	115	0.2	0.1	0.7	0	0.04	0.1	0.5	0.02	0.07	5	0	tr
Apples, raw with skin	150	1 medium 3/lb	80	0.3	0.8	20	10	15	10	1	150	0.06	0.1	0.4	100	0.04	0.03	0.1	0.04	0.2	5	0	6
Apple juice, canned, no sugar added	125	1/2 c	60	0.1	tr	15	10	10	5	1	125	0.04	.01	0.6	u	0.01	0.02	0.1	0.04	0.1	1	0	1
Applesauce, sweetened	125	1/2 c	120	0.3	0.1	30	5	5	5	3	100	0.1	.01	0.6	50	0.03	0.01	tr	0.04	0.1	1	0	1
Apricots																							
Fresh	100	2–3 medium	50	1.0	0.2	13	15	25	10	1	280	0.04	0.1	0.5	2700	0.03	0.04	0.6	0.07	0.2	u	0	10
Canned, heavy syrup	120	4 halves, 2 tbsp juice	100	0.7	0.1	25	15	20	10	1	235	0.04	0.1	0.4	2000	0.02	0.02	0.5	0.06	0.1	u	0	5
water pack	100	4 halves, 2 tbsp juice	40	0.7	0.1	10	10	15	10	1	246	0.03	0.1	0.3	1800	0.02	0.02	0.4	0.06	0.1	u	0	4
Dried, sulfured, raw	30	4–6 medium halves	80	1.5	0.2	20	20	30	20	1	295	0.04	0.1	1.7	3300	tr	0.05	1.0	0.05	0.2	3	0	4
Apricot nectar, canned	125	1/2 c	70	0.4	0.1	18	10	15	5	tr	190	u	u	0.3	1200	0.01	0.01	0.3	0.04	0.10	u	0	4
Artichokes, French, boiled	120	1 large (300 g as purchased)	30	3.0	0.2	12	60	85	u	35	380	0.4	0.4	1.3	200	0.08	0.05	0.6	0.30	0.60	u	0	10
Asparagus,[3]																							
Fresh, green, cooked	100	1/2 c cut, 6–7 spears	20	2.0	0.2	4	20	50	15	1	185	0.3	0.1	0.6	900[3]	0.2	0.2	1.5	0.2	0.6	60	0	25
Canned, salt added[3]	100	1/2 c cut, 6–7 spears	20	2.0	0.4	3	20	50	15	235	165	0.8	0.1	1.9	800[3]	0.06	0.1	0.8	0.06	0.2	25	0	15
Avocados	125	1/2 fruit, 4 in long	190	2.0	18.0	7	10	45	55	5	680	0.5	0.5	0.7	350	0.1	0.2	2.0	0.4	1.1	40	0	15
Baby foods																							
Dinners	130	Contents 4½ oz jar																					
beef-noodle			60	3.5	1.5	9	15	35	u	150	205	u	0.1	0.6	790	0.03	0.06	0.6	0.04	0.2	u	0.3	3
beef-vegetable			110	9.5	4.5	8	15	110	u	115	145	u	0.1	1.5	1410	0.08	0.2	2.0	0.10	0.3	4	0.3	3
vegetable-beef-cereal			70	3.5	2.0	10	20	50	u	150	185	u	0.1	1.0	3880	0.04	0.05	1.0	0.05	0.2	u	0.2	1
Fruits and desserts	135	Contents 4¾ oz jar																					
banana-pineapple			110	0.5	0.1	30	30	15	u	10	100	u	0.1	0.3	40	0.01	0.01	0.1	0.06	0.2	1	0.05	3
custard pudding			130	3.0	2.5	25	80	80	u	80	120	u	0.06	0.4	130	0.03	0.2	0.1	0.02	0.3	u	0.2	1
fruit pudding			130	1.5	1.0	30	35	45	u	15	100	u	0.1	0.4	140	0.04	0.07	0.1	0.02	0.2	u	0.08	4
Bacon, broiled, drained	25	2 strips, thick	140	6.5	12.5	1	3	56	5	245	60	1.2	0.1	0.8	0	0.1	0.08	1.0	0.03	0.08	0.1	0.2	0
Bagels	60	4 in diameter	180	6.5	2.0	30	10	50	u	u	u	0.6	0.2	1.3	30	0.15	0.11	1.3	u	u	u	0	0
Bamboo shoots	100	3/4 c	25	2.5	0.3	5	13	60	u	u	530	u	u	0.5	20	0.15	0.07	0.6	u	u	u	0	4

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Minerals								Vitamins								
	g		kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Bananas	120	1 medium	100	1.5	0.2	25	10	30	55	1	440	0.3	0.2	0.8	250	0.06	0.07	0.8	0.6	0.3	25	0	10
Beans																							
Canned, with pork and tomato sauce	130	1/2 c	180	8.0	3.5	25	70	115	35	590	270	1.0	0.2	2.3	150	0.10	0.04	0.8	0.4	0.1	10	0	3
Canned, with pork and sweet sauce	130	1/2 c	190	8.0	6.0	25	80	145	35	485	u	1.0	0.3	3.0	u	0.08	0.05	0.7	0.1	0.1	10	0	3
Lima, fresh or frozen, boiled	85	1/2 c	95	6.5	0.4	17	40	105	55	2	360	0.9	0.4	2.2	250	0.20	0.08	1.0	0.1	0.2	8	0	15
Red, canned	125	1/2 c	120	7.0	0.5	20	35	140	35	4	335	1.0	0.2	2.3	tr	0.06	0.05	0.8	0.4	0.1	10	0	0
Refried	120	1/2 c	230	8.5	12.5	25	50	165	35	340	380	1.0	0.2	2.3	tr	0.30	0.07	0.8	0.2	0.2	20	0	0
Snap, green, fresh or frozen, boiled	65	1/2 c	15	1.0	0.2	3	55	25	15	2	95	0.2	0.08	0.4	360	0.05	0.06	0.3	0.04	0.1	5	0	8
canned	65	1/2 c	15	1.0	0.2	3	55	25	15	150	80	0.2	0.08	1.0	300	0.02	0.04	0.2	0.03	tr	5	0	2
Soybeans, mature, dry, cooked	90	1/2 c (1 oz, dry wt.)	120	10.0	5.0	10	65	160	80	2	480	0.6	0.3	2.5	20	0.20	0.08	0.6	u	u	20	0	0
Bean sprouts. See Sprouts.																							
Beef																							
Corned, canned	80	2 slices each, 3 in x 2 in x ¼ in	170	20.0	9.5	0	15	85	20	u	u	2.5	u	3.4	tr	0.02	0.20	3.0	0.08	0.5	2	1.5	0
hash, with potatoes	110	1/2 c	200	10.0	12.5	12	15	75	20	585	220	1.4	u	2.2	tr	0.01	0.10	2.5	0.08	0.6	u	0.8	0
Dried, creamed	120	1/2 c	190	10.0	12.5	9	130	170	40	880	190	1.8	u	1.0	450	0.08	0.20	0.8	0.60	0.7	u	u	1
Hamburger, broiled, lean, 21% fat	85	4/lb, raw wt.	240	20.0	16.5	0	10	160	20	50	220	3.7	0.07	2.6	30	0.07	0.20	4.5	0.4	0.3	3	1.5	0
very lean, 10% fat	85	4/lb, raw wt.	190	23.0	9.5	0	10	195	20	60	260	4.9	0.09	3.0	20	0.08	0.20	5.0	0.4	0.3	3	1.5	0
Roast, chuck, braised	85	3 oz	240	23.0	16.5	0	10	115	20	40	185	3.7	0.07	2.9	30	0.04	0.20	3.5	u	u	3	1.5	0
rib, U.S. choice	85	3 oz	380	17.0	33.5	0	10	160	20	40	190	3.1	0.07	2.2	70	0.06	0.10	3.0	0.3	0.3	3	1.5	0
Steak, broiled																							
round with fat	85	3 oz	220	24.5	13.0	0	10	215	25	60	270	5.0	0.09	3.0	20	0.07	0.20	5.0	0.3	0.4	3	2.2	0
sirloin with fat	85	3 oz	330	20.0	27.0	0	10	160	20	50	220	3.7	0.07	2.5	50	0.05	0.20	4.0	u	u	3	1.5	0
Beef stew, with vegetables	245	1 c	220	15.5	10.5	15	30	185	50	90	615	2.4	0.05	2.9	2400	0.15	0.15	4.7	0.3	0.2	7	1.6	15
Beer	360	12 oz bottle	150	1.0	0	14	20	110	35	25	90	0.1	0.2	tr	0	0.01	0.10	2.0	0.2	0.3	25[a]	0	0
Beet greens, boiled	75	1/2 c	15	1.0	0.2	2	70	20	80	55	240	0.5	0.1	1.4	3700	0.06	0.10	0.2	0.08	0.2	u	0	10
Beets, sliced, canned	85	1/2 c	30	1.0	0.1	8	15	15	15	200	135	0.3	0.1	0.6	20	0.01	0.03	0.1	0.04	0.1	30	0	2
Beverages. See Carbonated beverages, individual entries, and Table 3–5, Chapter 3.																							
Biscuits, from mix, enriched	30	1 of 2 in diameter	90	2.0	3.0	15	20	65	5	270	30	0.3	0.09	0.6	tr	0.08	0.07	0.6	0.01	0.1	2	0	0
Blackberries, boysenberries, etc., raw	70	1/2 c	40	0.8	0.6	9	25	15	20	1	120	0.05	0.1	0.6	150	0.02	0.03	0.3	0.04	0.2	2	0	15
Blueberries, raw	70	1/2 c	45	0.5	0.4	11	10	10	4	1	60	0.05	0.08	0.8	80	0.02	0.04	0.4	0.05	0.1	2	0	10
Bokchoy. See Pakchoy.																							
Brazil nuts, raw	30	6 large nuts	180	4.0	19.0	3	55	195	65	tr	205	1.4	0.4	1.0	tr	0.30	0.03	0.5	0.05	0.1	tr	0	0
Bread																							
Boston brown, canned	45	1 slice, ½ in thick	95	2.5	0.6	20	40	70	u	115	130	u	u	0.9	30	0.05	0.03	0.5	u	u	u	0	0
Corn, from mix	55	2½ in square	180	4.0	6.0	30	135	210	u	265	60	u	u	0.8	150[a]	0.10	0.10	0.8	u	u	u	u	0

Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Bread, continued																							
Cracked wheat	25	1 slice	65	2.2	0.5	13	20	30	10	130	35	0.3	0.06	0.3	tr	0.03	0.02	0.3	0.02	0.2	3	0[19]	0
French, Vienna, Italian, enriched	25	1 slice	70	2.3	0.8	14	10	20	5	145	20	0.5	0.08	0.6	0	0.07	0.06	0.6	0.02	0.1	3	0	0
Fry bread, Indian, enriched	60	1 piece, medium	200	4.0	7.5	28	80	50	u	305	35	u	u	1.0	0	0.10	0.09	1.3	0.02	0.2	10	0	0
Raisin, not enriched	25	1 slice	65	1.5	0.7	13	20	20	5	90	60	0.3	0.06	0.3	tr	0.01	0.02	0.2	0.01	0.1	3	0[19]	0
Rye, American	25	1 slice	65	2.5	0.3	13	15	40	10	140	35	0.4	0.05	0.4	0	0.05	0.02	0.4	0.02	0.1	2	0	0
White, not enriched	25	1 slice	70	2.2	0.8	13	20	25	5	130	25	0.2	0.05	0.2	tr	0.02	0.02	0.3	0.01	0.1	3	0[19]	0
enriched	25	1 slice	70	2.2	0.8	13	20	25	5	130	25	0.2	0.05	0.6	tr	0.08	0.05	0.6	0.01	0.1	3	0[19]	0
Whole-wheat	25	1 slice	65	2.5	0.8	12	25	60	10	130	70	0.4	0.06	0.8	tr	0.06	0.03	0.7	0.04	0.2	9	0[19]	0
Broccoli, fresh or frozen, boiled	85	1/2 c	20	2.5	0.2	4	70	50	15	8	20[illegible]	0.2	0.07	0.6	1900	0.07	0.20	0.6	0.1	0.4	20	0	70
Brussels sprouts, fresh or frozen, boiled	85	4 large sprouts	30	3.5	0.3	5	25	60	15	8	230	0.3	0.08	0.9	440	0.07	0.12	0.7	0.4	1.1	15	0	70
Butter, salted	5	1 tsp or pat (90/lb)	35	tr	4.0	tr	1	1	tr	40	1	tr	0	tr	150	tr	tr	tr	0	0	0	tr	0
	15	1 tbsp	100	0.1	11.5	0.1	3	3	tr	120	3	tr	0	tr	450	tr	tr	tr	0	0	0	tr	0
Cabbage, green, headed																							
Raw, shredded	70	1 c	17	0.9	0.1	4	35	20	10	15	165	0.3	0.08	0.3	90	0.04	0.64	0.2	0.1	0.1	20	0	35
Cooked, chopped	70	1/2 c	15	0.8	0.2	3	30	15	10	10	120	0.3	0.02	0.2	100	0.03	0.03	0.2	0.09	0.1	2	0	25
Cakes																							
Angel food	40	2 in sector of 10 in cake	105	2.5	0.1	25	40	50	10	60	25	0.1	0.02	0.1	0	tr	0.04	tr	tr	0.08	1	tr	0
Cheese cake, frozen[6]	85	1/10 of cake	225	6.5	12.5	24	80	80	30	170	90	u	0.04	0.5	200	0.05	0.1	0.3	u	u	u	u	tr
Chocolate, with chocolate icing	90	2 in sector of 8 in cake	310	4.0	11.5	56	55	95	20	240	120	1.1	0.3	0.7	150	0.03	0.07	0.3	0.07	0.4	3	0.1	0
Gingerbread	65	2¾ in square	170	2.0	4.5	30	55	65	u	190	175	u	u	1.0	tr	0.02	0.06	0.5	u	u	u	u	0
Cupcake, iced	50	1 medium	180	2.0	6.0	30	60	95	u	160	55	u	u	0.4	80	0.02	0.05	0.1	u	u	u	u	0
Pound cake	30	3½ in x 3 in x ½ in	140	1.5	9.0	14	6	25	5	35	20	0.2	0.02	0.2	80	0.01	0.03	0.1	0.01	0.09	2	u	0
Yellow with chocolate icing	70	2 in sector of 8 in cake	230	3.0	8.0	40	65	125	15	180	75	0.3	0.07	0.4	100	0.01	0.06	0.1	0.03	0.2	2	u	0
Candy																							
Caramels	30	1 oz	120	1.0	3.0	20	40	35	u	65	55	u	0.01	0.4	tr	0.01	0.05	0.1	tr	0	u	u	0
Chocolate bar																							
plain milk chocolate	30	1 oz	140	2.0	9.0	16	65	65	20	25	110	0.1	0.3	0.3	80	0.02	0.10	0.1	tr	0.03	1	u	0
with almonds	30	1 oz	150	2.5	10.0	14	65	75	u	25	125	0.1	u	0.5	70	0.02	0.10	0.2	tr	u	1	u	0
Fudge with nuts	30	1 oz	120	1.0	5.0	20	20	30	u	50	50	u	u	0.3	tr	0.01	0.03	0.1	u	u	u	tr	0
Hard	30	1 oz	110	0	0.3	30	6	2	u	10	1	u	0.03	0.5	0	0	0	0	0	0	0	0	0
Marshmallow	30	1 oz, 4 large	90	0.6	tr	25	5	2	u	10	2	0.01	0.06	0.5	0	0	tr	tr	u	u	0	0	0
Peanut brittle	30	1 oz.	120	1.5	3.0	25	10	25	u	10	45	u	u	0.7	0	0.05	0.01	1.0	u	u	u	0	0
Cantaloupe. See *Melons.*																							
Carbonated beverages, sweet	170	6 oz	65	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Carrots																							
Raw	80	1 carrot, 7 1/2 in x 1 1/8 in	30	0.8	0.1	7	25	25	15	35	245	0.3	0.07	0.5	7900	0.04	0.04	0.4	0.1	0.2	10	0	6
Boiled	70	1/2 c diced	20	0.5	0.3	10	25	20	4	25	160	0.2	0.07	0.4	7800	0.04	0.04	[illegible]	0.02	0.2	2	0	4
Cashews, roasted	30	1 oz	160	5.0	13.0	8	10	105	80	60	130	1.3	0.2	1.1	30	0.1	0.07	0.5	0.1	0.4	2	0	0
Cauliflower																							
Raw	50	1/2 c whole flower buds	15	1.5	0.1	3	10	30	12	5	150	u	0.1	0.6	60	0.1	0.1	0.7	0.1	0.5	15	0	75
Boiled	60	1/2 c	15	1.5	0.2	3	15	25	8	10	130	u	0.1	0.4	40	0.06	0.05	0.4	0.1	0.5	2	0	35
Celery																							
Raw	80	2 large stalks	15	0.8	0.1	3	30	20	17	100	270	u	0.08	0.2	200[9]	0.02	0.02	0.2	0.05	0.3	5	0	8
Boiled	75	1/2 c diced	10	0.6	0.1	2	25	15	u	65	180	u	0.08	0.2	200[9]	0.02	0.02	0.2	0.05	0.3	u	0	4
Cereals, breakfast																							
Ready-to-eat																							
bran flakes, 40% enr.	35	1 c	100	3.6	0.6	30	20	125	u	205	135	1.3	0.4	12.4	0[8]	0.4	0.5	4.0	0.1	0.3	6	0	0[8]
corn flakes, enriched	25	1 c	95	2.0	0.1	20	4	10	4	250	30	0.07	0.03	0.6	0[8]	0.3	0.4	3.0	0.02	0.05	3	0	0[8]
granola	50	1/2 c	215	5.7	9.6	29	30	170	60	3	180	1.0	0.4	1.6	0	0.16	0.08	1.1	0.08	0.45	20	tr	0
rice, puffed, enriched	15	1 c	60	0.9	0.1	13	3	15	u	tr	15	0.2	0.03	0.3	0	0.07	0.01	0.7	0.01	0.08	1	0	0
wheat flakes, enriched	30	1 c	100	3.0	0.5	25	10	85	30	310	80	0.7	0.3	1.1	0[8]	0.4	0.4	3.5	0.08	0.1	3	0	0[8]
wheat, shredded	50	1 c of spn-sized	180	5.0	1.0	40	20	195	65	2	175	1.4	0.4	1.8	0	0.1	0.06	2.0	0.1	0.4	5	0	0
Cooked, 1 oz. dry wt., salt added																							
cornmeal and grits,																							
unenriched	120	1/2 c	60	1.5	0.2	13	1	15	10	130	20	0.1	0.06	0.2	70[9]	0.02	0.01	0.1	0.04	0.2	2	0	0
enriched	120	1/2 c	60	1.5	0.2	13	1	15	10	130	20	0.1	0.06	0.5	70[9]	0.07	0.05	0.6	0.04	0.2	2	0	0
oatmeal	120	1/2 c	65	2.5	1.0	12	10	70	30	280	75	0.6	0.04	0.7	0	0.10	0.02	0.1	0.04	0.4	5	0	0
wheat, farina																							
light, enriched (e.g., Cream of Wheat)	120	1/2 c	50	1.5	0.1	10	5	15	4	175	10	0.07	0.04	0.4	0	0.05	0.04	0.5	0.02	0.1	5	0	[illegible]
whole-meal (e.g., Ralston)	120	1/2 c	55	2.0	0.4	12	10	65	35	280	80	0.6	0.3	0.6	0	0.08	0.02	0.8	0.1	0.2	10	0	0
Chard, Swiss, boiled	70	1/2 c	15	1.5	0.2	2	56	20	45	86	230	u	u	1.3	3900	0.03	0.08	0.3	u	0.1	u	0	0
Cheese																							
Natural																							
blue, Roquefort	30	1 oz	100	6.0	8.0	0.7	150	110	7	395	75	0.8	0.04	0.1	200	0.01	0.1	0.3	0.05	0.5	0.3	0.3	0
cheddar	30	1 oz	115	7.0	9.5	0.4	205	145	8	175	30	0.9	0.04	0.2	300	0.01	0.1	tr	0.02	0.1	0.3	0.2	0
cottage, creamed	110	1/2 c	120	14.0	5.0	3.0	70	150	6	455	95	0.4	0.02	0.2	180	0.02	0.2	0.1	0.2	0.15	15[14]	0.7	0
cream	30	2 tbsp	100	2.0	10.0	0.8	25	30	2	85	35	[illegible]	0.01	0.3	400	tr	0.06	tr	0.01	0.1	0.2	0.1	0
Parmesan	30	1 oz	130	12.0	8.5	1.0	390	230	15	455	30	0.8	0.1	0.3	200	0.01	0.1	0.1	0.03	0.1	0.3	u	0
Swiss	30	1 oz	110	8.0	8.0	1.0	270	170	10	75	30	1.1	0.04	0.1	260	tr	0.1	tr	0.02	0.1	0.3	0.5	0
Pasturized, processed																							
American	30	1 oz	110	6.0	9.0	0.5	175	210	6	405	45	0.8	0.05	0.1	350	0.01	0.1	tr	0.02	0.1	0.9	0.2	0
cheese spread	30	1 oz	80	4.5	6.0	2	160	200	8	380	70	0.7	u	0.1	200	0.01	0.1	tr	0.03	0.2	u	0.1	0
Cheese fondue	100	2/3 c	260	15.0	18.5	10	320	295	u	540	165	u	0.04	1.2	900	0.06	0.3	0.2	u	u	u	u	0
Cherries																							
Raw, sweet	75	10 cherries	45	0.9	0.2	12	15	15	10	1	130	0.1	0.1	0.3	70	0.03	0.04	0.3	0.02	0.2	4	0	7
Red, canned																							
heavy syrup	130	1/2 c with syrup	100	1.0	0.2	25	20	15	10	2	160	u	0.06	0.4	80	0.02	0.02	0.2	0.06	0.1	tr	0	4
water pack	120	1/2 c with juice	50	1.0	0.2	13	20	15	10	2	160	u	0.06	0.4	80	0.04	0.02	0.2	u	u	tr	0	4

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Chicken																							
Canned, flesh only	100	1/2 c	200	22.5	12.0	0	20	255	20	u	140	2	0.2	1.6	250	0.04	0.1	4.5	0.3	0.8	2	0.8	0
Creamed	120	1/2 c	210	17.5	12.0	7	85	140	u	u	u	u	u	1.1	300	0.04	0.2	4.0	u	u	u	u	tr
Fried																							
breast	95	1/2 breast	180	25.5	5.0	1	9	220	10	u	u	0.8	0.1	1.3	70	0.04	0.2	11.5	0.6	0.8	2	0.4	0
leg	55	1 medium	90	12.0	4.0	0.4	6	90	10	u	u	1.4	0.1	0.9	50	0.03	0.2	2.5	0.3	0.2	3	0.2	0
thigh	65	1 medium	120	15.0	6.0	1	7	120	10	u	u	1.6	0.1	1.2	100	0.03	0.2	3.5	0.4	0.5	3	0.3	0
Roasted, light meat, without skin	100	3½ oz	170	31.5	3.0	0	12	265	u	65	410	0.9	0.1	1.4	60	0.04	0.1	11.5	0.7	0.8	3	0.4	0
Chickpeas or garbanzos, cooked without salt	125	1/2 c (30 gm, dry wt.)	110	6.0	1.0	18	45	106	u	10	240	2.7	u	2.1	15	0.1	0.03	0.6	0.2	0.4	7	0	0
Chili con carne, with beans, canned	255	1 c	340	19.0	15.5	30	80	320	65	1355	585	4.2	0.8	4.2	150	0.08	0.20	3.3	0.3	0.4	10	u	tr
Chili powder, chilis. See Peppers.																							
Chili relleno (stuffed pepper)	110	1 pepper	190	10.5	14.0	6	225	195	u	485	270	u	u	1.3	1600	0.08	0.2	0.8	0.1	0.7	15	1.0	56
Chocolate, bitter or baking	30	1 oz	140	3.0	15.0	8	20	110	u	1	235	0.7	0.8	1.9	20	0.01	0.07	0.4	0.01	0.06	4	0	0
Sweet, milk. *See Candy.*																							
Chow mein, canned, chicken without noodles	250	1 c	95	6.5	0.3	18	45	85	45	725	420	1.2	0.3	1.3	150	0.05	0.10	1.0	0.4	1.2	10	1.6	15
Clams, canned, with liquid	100	3½ oz, 1/2 c	50	8.0	0.7	3	55	135	115	u	140	1.2	0	4.0	u	0.01	0.1	1.0	0.08	0.3	3	20	u
Cocoa, dry	5	1 tbsp	15	0.9	1.0	3	5	35	20	tr	80	[illegible]	0.2	0.6	tr	0.01	0.02	0.1	tr	tr	1	0	0
Coconut, dry, unsweetened	30	1 oz	180	2.0	17.5	6	5	50	u	u	160	u	0.2	0.9	[illegible]	0.02	0.01	0.2	0.01	0.06	u	0	0
Coffee, instant, regular dry powder	2.5	1 tbsp	3	tr	tr	1	4	10	10	2	80	0.01	0.02	0.1	0	0	0.01	0.8	0.02	u	u	0	0
Collards, boiled	70	1/2 c	20	2.0	0.4	4	110	30	30	35	170	0.5	0.2	0.4	3900	0.1	0.2	0.8	0.1	0.3	25	0	35
Cookies																							
Commercial assortment	35	4 cookies	170	1.5	7.0	25	10	56	5	125	25	0.2	0.05	0.2	30	0.01	0.02	0.1	0.02	0.1	1	0	0
Fig bar	55	4 cookies	200	2.0	3.0	40	45	35	15	140	110	0.6	0.1	0.6	60	[illegible]	0.04	0.2	0.06	0.2	2	0	tr
Oatmeal with raisins	50	4 cookies	235	3.0	8.0	40	10	55	u	85	190	0.6	0.06	1.5	30	0.06	0.04	0.3	u	u	2	u	tr
Corn, sweet, yellow																							
Fresh or frozen, boiled	80	1/2 c	70	2.5	0.8	15	2	75	25	tr	135	0.3	0.08	0.5	350	0.09	0.08	1.0	0.2	0.3	2	0	6
Canned, whole kernel	80	1/2 c	70	2.0	0.6	16	4	40	15	195	80	0.3	0.05	0.4	300	0.02	0.04	0.8	0.2	0.2	2	0	4
Cream style	130	1/2 c	110	2.5	0.8	25	4	70	25	300	125	0.6	0.08	0.8	400	0.04	0.06	1.5	0.3	0.4	2	0	6

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Corn fritter	35	1 fritter 2 in x 1½ in	130	2.5	8.0	14	20	55	u	185	45	u	u	0.6	150	0.06	0.07	0.6	u	u	u	u	tr
Corn syrup	20	1 tbsp	60	0	0	15	10	3	u	15	1	u	0.07	u	0	0	0	0	0	0	0	0	0
Cowpeas or blackeye peas																							
Immature	80	1/2 c	90	7.0	0.6	15	20	120	15	1	310	0.8	0.2	1.7	300	0.2	0.09	1.0	0.04	0.2	20	0	15
Mature, dry, cooked	125	1/2c,(1oz dry wt.)	95	6.5	0.4	17	20	120	u	10	285	2.0	0.2	1.6	10	0.2	0.05	0.5	0.07	0.3	20	0	u
Crabmeat	100	1/2 c, packed	100	18.0	2.0	0.6	45	185	u	u	90	4.5	1.0	0.8	2300	0.2	0.08	3.0	0.3	0.6	2	10	2
Crackers																							
Butter (e.g., Ritz)	15	5 round	75	1.1	3.0	11	25	40	u	180	20	u	0.03	0.1	30	tr	tr	0.1	u	u	u	0	0
Graham	14	1 cracker 5 in x 2½ in	55	1.0	1.0	10	5	20	5	95	55	0.2	0.03	0.2	0	0.01	0.03	0.2	0.01	0.08	4	0	0
Rye wafer (e.g., Rykrisp)	15	2 wafers	40	1.5	0.2	10	5	50	u	115	u	u	0.04	0.5	0	0.04	0.03	0.2	u	u	u	0	0
Saltines	10	4 each, 2 in square	50	1.0	1.5	8	2	10	3	125	15	0.05	0.02	0.1	0	tr	tr	0.1	0.01	0.05	2	0	0
Cranberry jelly, or sauce, canned	35	1/8 c	50	tr	tr	13	2	1	u	tr	10	tr	u	tr	10	tr	tr	tr	0.01	u	u	0	tr
Cream																							
Half-and-half	60	1/4 c or 4 tbsp	80	2.0	7.0	3	65	55	6	25	80	0.3	0.07	tr	300	0.02	0.08	0.02	0.02	0.2	1	0.2	tr
Heavy, whipping	60	1/4 c; 1/2 c whipped vol	210	1.0	22.0	2	45	35	4	20	45	0.1	0.06	tr	850	0.01	0.06	0.02	0.01	0.2	0.6	0.1	tr
Light, for coffee	60	1/4 c, 4 tbsp	120	2.0	12.0	2	60	50	5	25	75	0.2	0.06	tr	450	0.02	0.08	tr	0.02	0.2	0.8	0.1	tr
Sour	60	1/4 c, 4 tbsp	130	1.5	11.0	2	60	50	5	25	80	0.2	0.06	tr	450	0.02	0.08	0.05	0.01	0.2	7	0.1	tr
Cream substitutes																							
Coffee whitener	3	1 tsp or packet	15	0.1	0.8	2	1	12	tr	5	20	0.02	u	tr	5	0	0	0	0	0	0	0	0
Whipped topping, frozen	10	2 tbsp	30	0.1	2.5	2	1	1	tr	2	2	tr	u	tr	80	0	0	0	0	0	0	0	0
Cucumber, raw, peeled	80	1/2 small	10	0.4	0.1	2	15	15	5	4	125	0.08	0.04	0.2	tr	0.02	0.03	0.2	0.03	0.2	10	0	8
Custard, baked	130	1/2 c	150	7.0	7.5	15	150	155	u	105	195	u	0.1	0.6	450	0.06	0.2	0.2	u	u	4	u	0
Dandelion greens, boiled	90	1/2 c	20	1.0	0.3	3	75	20	20	25	120	u	u	1.0	6100	0.07	0.08	u	u	u	u	0	10
Dasheen (Japanese taro), raw	100	1 1/3 corms	100	2.0	0.2	25	30	60	u	5	515	u	u	1.0	20	0.1	0.04	1.1	u	u	u	0	4
Dates, dried	80	10, pitted	220	2.0	0.4	60	45	50	45	1	520	u	0.2	2.4	40	0.07	0.08	2.0	0.1	0.6	10	0	0
Doughnuts																							
Cake type	40	1 average	160	2.0	8.0	20	15	80	5	210	40	0.2	0.04	0.6	30	0.07	0.07	0.5	0.02	0.2	3	0	0
Yeast, raised	40	1 average	180	2.5	11.0	16	15	30	5	100	35	0.3	0.04	0.6	30	0.07	0.07	0.6	0.02	0.2	4	0	0
Eggnog	250	1 c	340	9.5	19.0	34	330	275	45	140	420	1.1	u	0.5	900	0.08	0.5	0.3	0.1	1.1	2	1.1	3
Eggs, chicken																							
Whole, raw or hard cooked	50	1 large	80	6.0	5.5	0.6	30	90	6	60	65	0.7	0.05	1.0	300	0.04	0.15	tr	0.06	0.9	25	0.6	0
white	33	1 white	15	3.5	tr	0.4	4	4	3	50	45	tr	0.01	tr	0	tr	0.09	tr	tr	0.07	1	0.02	0
yolk	17	1 yolk	65	3.0	5.0	tr	25	85	3	10	15	0.6	0.05	0.9	300	0.04	0.07	tr	0.05	0.9	25	0.6	0
Scrambled	140	2 eggs	190	12.0	14.0	30	95	195	15	310	170	1.4	0.07	1.9	600	0.07	0.30	0.1	0.1	1.8	50	1.3	tr
Eggplant, boiled	100	1/2 c diced	20	1.0	0.2	4	10	20	15	1	150	u	0.1	0.6	10	0.05	0.04	0.5	0.08	0.2	2	0	3

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Nutrient Composition Table—Continued

Food	Weight g	Approximate Measure	Energy Kcal	Protein g	Fat g	Total Carbohydrate g	Minerals								Vitamins								
							Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Enchiladas, beef																							
Frozen, commercial[10]	200	7 oz portion	240	15.0	8.5	25	20	190	u	725	155	u	u	2.5	800	0.1	0.2	3.0	u	u	u	u	u
Home recipe	180	2 enchiladas	385	32.0	18.7	22	480	480	u	510	585	u	u	5	6000	0.1	0.4	6.0	0.8	0.7	10	2	10
Fats, shortening, solid	100	1/2 c	880	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
or oil	12	1 tbsp	110	0	12.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Figs, fresh	100	2 medium	80	1.0	0.4	20	35	20	20	2	195	u	0.07	0.6	80	0.06	0.06	0.4	0.1	0.3	u	0	2
Dried	30	2 small	80	1.5	0.4	20	40	25	20	u	190	u	0.08	0.6	20	0.03	0.03	0.2	0.05	0.1	1	0	0
Fish																							
Cod, steak, sautéed	110	4 oz	180	30.0	6.0	0	30	285	30	115[11]	420	0.9	0.2	1.0	200	0.08	0.1	3.0	0.3	0.3	10	0.9	0
Fish sticks, breaded	110	4 sticks	200	19.0	10.0	7	10	190	20	u	u	0.3	0.2	0.4	0	0.04	0.08	2.0	0.06	0.3	10	1.1	0
Haddock, fried	110	4 oz	180	22.0	7.0	8	45	270	30	195[11]	385	1.1	0.2	1.3	u	0.04	0.08	3.5	0.2	0.1	5	1.4	2
Mackerel, sautéed	105	3 average	250	23.0	17.0	0	5	295	30	u	u	1.0	0.2	1.3	550	0.2	0.3	8.0	0.7	0.9	5	9.4	0
Salmon,																							
steak, broiled	145	1 average 6 in x 2 in	230	35.0	9.0	0	u	530	60	150[11]	565	2.4	1.2	1.5	200	0.2	0.08	12.5	1.0	1.9	6	5.8	0
canned, pink	110	1/2 c	160	23.0	6.0	0	215	315	30	425	395	1.0	0.3	0.9	80	0.04	0.2	9.0	0.3	0.6	10	7.6	0
red	110	1/2 c	190	22.0	10.0	0	285	360	30	575	380	1.0	0.3	1.3	250	0.04	0.2	8.0	0.3	0.6	10	7.6	0
Sardines																							
canned in oil	85	3 oz drained	170	20.5	9.0	0	370	425	35	700	500	2.4	0.03	2.4	200	0.03	0.2	4.5	0.2	0.7	10	8.5	0
Sole or flounder, fillet, baked	100	3 oz	200	30.0	8.0	0	25	345	30	235[11]	585	1.0	0.07	1.4	u	0.07	0.08	2.5	0.2	0.8	10	1.2	2
Swordfish, broiled	100	3 oz	170	28.5	6.0	5	25	280	u	u	u	u	u	1.3	2000	0.04	0.05	10.5	u	0.2	u	1.0	0
Tuna, raw	100	1/2 c	135	27.5	3.0	0	5	175	30	35[11]	160	0.5	0.5	1.3	50	0.02	0.05	6.6	0.9	0.5	3	3.0	7
canned in oil	100	1/2 c	200	28.0	8.0	0	10	230	25	u	u	1.0	0.1	1.9	80	0.05	0.1	12.0	0.4	0.3	8	2.2	0
in water	100	1/2 c	130	28.0	0.8	0	15	190	25	865	275	u	u	1.6	80	0.05	0.1	13.0	0.4	0.3	8	2.2	0
Flour, wheat																							
White, all purpose																							
unenriched	115	1 c	420	12.0	1.0	90	20	100	30	2	110	0.8	0.2	0.9	0	0.07	0.06	1.0	0.07	0.5	20	0	0
enriched	115	1 c	420	12.0	1.0	90	20	100	30	2	110	0.8	0.2	3.3	0	0.5	0.3	4.0	0.07	0.5	20	0	0
Whole-grain	120	1 c	400	16.0	2.5	85	50	445	135	4	445	2.9	0.6	4.0	0	0.7	0.1	5.0	0.4	1.3	35	0	0
French toast, frozen[10]	65	1 slice	130	5.0	4.3	18	50	85	u	305	80	u	u	1.3	250	0.1	0.1	0.7	u	u	u	u	0
Frozen dinners																							
Chicken, fried, with potatoes, mixed vegetables	310	11 oz dinner	570	28.0	29.0	48	70	380	80	1075	350	3.0	0.4	3.2	1800	0.2	0.6	16.0	0.9	1.6	20	0.7	10
Meat loaf with tomato sauce, potatoes, peas	310	11 oz dinner	410	25.0	21.0	30	60	365	60	1225	380	3.6	0.5	4.0	1300	0.3	0.4	5.5	0.7	0.9	20	1.1	10
Turkey with gravy, potatoes, peas	310	11 oz dinner	340	25.0	9.0	40	80	260	65	1200	530	3.0	0.4	3.3	400	0.2	0.3	7.0	0.8	1.8	30	0.6	10
Fruit cocktail	130	1/2 c	95	0.5	0.2	25	10	15	40	5	205	u	0.04	0.5	200	0.02	0.02	0.5	0.04	u	u	0	2
Gelatin, dry	8	1 tbsp or packet	30	7.0	0	0	u	u	2	1	u	u	0.1	u	0	0	0	0	0	0	0	0	0
Gelatin dessert, plain	120	1/2 c	70	2.0	0	17	u	u	2	u	u	0.02	0.03	u	0	0	0	0	0	0	0	0	0

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Grapefruit, raw	100	1/2 medium	40	0.5	0.1	10	15	15	12	1	130	0.1	0.04	0.4	80	0.04	0.02	0.2	0.03	0.3	8	0	35
Grapefruit juice, canned																							
Unsweetened	180	3/4 c	75	0.9	0.2	18	15	25	22	2	300	u	0.02	0.7	20	0.06	0.04	0.4	0.02	0.2	15	0	85
Sweetened	180	3/4 c	100	0.9	0.2	25	15	25	20	2	300	u	0.02	0.7	20	0.06	0.04	0.4	u	u	15	0	80
Grapes, raw																							
Slip-skin	100	20 grapes	45	0.8	0.8	10	10	10	10	2	105	0.17	0.1	0.2	80	0.02	0.02	0.2	0.08	0.08	4	0	2
Adherent skin	100	20 grapes	70	0.6	0.4	17	10	20	6	4	175	0.3	0.1	0.4	100	0.06	0.04	0.4	0.08	0.08	4	0	4
Grape juice	190	3/4 c	120	0.4	tr	30	20	20	25	4	220	u	0.03	0.6	u	0.08	0.04	0.4	0.04	0.08	4	0	tr
Guacamole	120	1/2 c	140	2.1	12.8	7	15	40	u	165	565	u	0.3	0.7	550	0.10	0.2	1.6	0.4	0.9	30	0	35
Ham, baked	85	3 oz	250	18.0	19.0	0	10	145	15	635	200	3.4	0.3	2.2	0	0.4	0.2	3.0	0.3	0.3	1	0.4	0
Hominy grits. See Cereal, cooked.																							
Honey, strained	20	1 tbsp	65	0.1	0	17	1	1	1	1	10	0.02	0.03	0.1	0	tr	0.01	0.1	tr	0.04	0	0	tr
Ice cream, vanilla																							
Plain, 10% fat	66	1/2 c	135	2.5	7.0	15	90	70	10	60	130	0.7	0.02	0.05	300	0.02	0.2	0.05	0.03	0.3	1	0.3	0
Rich, 16% fat	75	1/2 c	175	2.0	12.0	16	75	60	8	50	110	0.6	0.02	0.05	450	0.02	0.15	0.05	0.03	0.3	1	0.3	0
Ice milk, vanilla	65	1/2 c	90	2.5	3.0	15	90	65	10	50	130	0.3	u	0.09	100	0.04	0.2	0.05	0.04	0.3	1	0.4	0
Ices, water, lime	95	1/2 c	120	0.4	tr	30	tr	tr	u	tr	3	u	u	tr	0	tr	tr	tr	0	0	0	0	0
Jams and jellies	20	1 tbsp	55	0.1	tr	14	4	2	1	2	20	0.1	0.02	0.2	tr	tr	0.01	tr	0.01	0.02	1	0	tr
Kale, boiled without stems	55	1/2 c	20	2.5	0.4	3	105	30	18	25	120	u	u	0.9	4600	0.06	0.1	0.9	0.2	0.6	25	0	50
Kidney, braised	100	3 1/2 oz	250	33.0	12.0	0.8	20	240	20	250	320	2.4	0.1	13.0	1100	0.5	4.8	10.5	0.4	3.8	60	30	u
Kohlrabi, boiled	80	1/2 c, diced	20	1.5	0.1	4	25	35	30	5	215	u	u	0.2	15	0.06	0.02	0.2	0.1	0.5	u	0	35
Kumquat, raw	20	1 medium	10	0.2	tr	3	10	4	u	1	45	u	u	0.1	100	0.01	0.02	u	u	u	u	0	7
Lamb, choice grade																							
Chop, loin, broiled																							
lean and fat	95	1 average	340	21.0	28.0	0	10	165	15	50	235	u	0.1	1.2	u	0.1	0.2	5.0	0.3	0.5	1	2.0	0
lean only	65	1 average	120	18.0	5.0	0	10	140	15	45	205	3.0	0.1	1.3	u	0.1	0.2	4.0	0.2	0.4	1	1.4	0
Leg, roasted																							
lean only	85	3 oz	160	24.0	6.0	0	10	200	15	60	275	3.6	0.05	1.9	u	0.1	0.3	5.5	0.2	0.5	1	1.8	0
Shoulder, roasted																							
lean and fat	85	3 oz	280	18.5	23.0	0	10	145	15	45	205	u	0.1	1.0	u	0.1	0.2	4.0	0.2	0.5	1	1.8	0
Lard. See Fats.																							
Lasagne, frozen[6]	225	8 oz serving	380	27.0	12.4	43	310	470	55	1100	740	1.4	u	5.6	1300	0.4	0.4	4.5	u	u	u	u	15
Lemon juice, fresh	15	1 tbsp	5	0.1	tr	1	1	2	1	tr	20	tr	0.01	tr	tr	tr	tr	tr	0.01	0.02	u	0	7
Lemonade, from frozen concentrate	250	1 c	110	0.1	tr	30	2	3	2	1	40	0.02	0.02	0.1	10	0.01	0.02	0.2	0.01	0.03	5	0	15
Lentils, dried, cooked	100	1/2 c	110	8.0	tr	19	25	120	20	u	250	1.0	0.3	2.1	20	0.07	0.06	0.6	u	u	6	0	0

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbo-hydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phos-phorus mg	Mag-nesium mg	Sodium mg	Potas-sium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thia-min mg	Ribo-flavin mg	Niacin mg	Vitamin B-6 mg	Panto-thenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Lettuce, raw																							
Head, solid (iceberg type)	90	1/6 head	10	0.8	0.1	3	20	20	10	10	160	0.4	0.08	0.5	300	0.05	0.05	0.3	0.05	0.2	30	0	5
Loose leaf, romaine, cos	55	1 c, chopped	10	0.7	0.2	2	35	15	10	5	145	0.2	0.05	0.8	1000	0.03	0.04	0.2	0.03	0.1	30	0	10
Liver																							
Beef, fried	85	3 oz	200	22.5	9.0	4	10	405	15	155	[illegible]	4.3	2.5	7.5	45,400	0.2	3.6	14.0	0.7	6.5	70	68.0	25
Calf, fried	85	3 oz	220	25.0	11.2	3	10	455	20	100	[illegible]	5.2	6.5	12.1	27,800	0.2	3.5	14.0	0.6	6.5	70	51.0	30
Chicken, simmered	70	1/2 c, chopped	120	18.5	3.0	2	10	110	u	40	[illegible]	2.4	0.2	6.0	8600	0.1	1.9	8.0	0.5	4.2	u	17.5	10
Lobster, northern, cooked	95	2/3 c meat	90	18.0	1.5	0.3	65	185	20	205	175	2.1	1.6	0.8	u	0.1	0.07	u	u	1.4	8	0.5	u
Lychee nuts, raw	150	10 nuts	60	0.8	0.3	15	5	40	u	3	155	u	u	0.4	0	u	0.05	u	u	u	u	0	40
Macaroni and other pastas, cooked																							
Unenriched	130	1 c	190	6.5	0.7	40	15	85	25	1[11]	105	0.6	0.03	0.7	0	0.03	0.03	0.5	0.03	0.2	5	0	0
Enriched	130	1 c	190	6.5	0.7	40	15	85	25	1[11]	105	0.6	0.03	1.4	0	0.2	0.1	2.0	0.03	0.2	5	0	0
Macaroni with cheese, casserole, baked	200	1 c	430	17.0	22.0	40	360	320	50	1086	240	1.3	0.08	1.8	850	0.2	0.4	2.0	0.08	0.4	10	0.8	0
Mangos, raw	165	1c, diced	110	1.0	0.7	30	15	20	30	10	310	0.8	0.2	0.7	7900	0.08	0.08	2.0	u	0.3	u	0	60
Margarine	5	1 tsp, 1 pat (90/lb)	35	tr	4	tr	1	1	tr	50	1	0.01	tr	0	160	0	0	0	0	0	0	0	0
Melons																							
Cantaloupe	160	1/2 melon or 1 c, cubed	50	1.0	0.2	12	20	25	20	20	400	0.1	0.06	0.6	5400	0.06	0.05	1.0	0.1	0.4	50	0	65
Honeydew	170	1/8 melon or 1 c, cubed	55	1.4	0.5	13	25	25	u	20	425	0.1	0.06	0.7	70	0.07	0.05	1.0	u	u	u	0	40
Watermelon	425	1/16 melon (2lb with rind)	110	2.0	0.9	25	30	45	35	5	425	u	0.3	2.1	2500	0.1	0.1	0.9	0.3	1.2	8	0	30
Milk, cow																							
Whole, fluid	245	1 c	155	8.0	8.5	11	290	225	30	120	370	1.0	0.08	0.1	350	0.09	0.4	0.2	0.1	0.8	10[14]	0.9	2
2%, low-fat	245	1 c	140	10.0	5.0	14	350	275	40	145	450	1.1	0.08	0.1	200[12]	0.1	0.5	0.2	0.1	0.9	15[14]	1.0	2
Skim, nonfat, or buttermilk	245	1 c	90	8.5	0.4	12	300	245	3	125[11]	400	1.0	0.08	0.1	10[13]	0.09	0.4	0.2	0.1	0.8	15[14]	1.0	2
Chocolate, low-fat	250	1 c	180	8.0	5.0	26	285	255	30	150	420	1.0	u	0.6	200[13]	0.1	0.4	0.3	0.1	0.7	10[14]	0.8	2
Dried, instant																							
whole	30	1/4 c	160	8.5	8.5	12	290	250	25	120	425	1.0	0.06	0.1	300	0.09	0.4	0.2	0.09	0.7	10[14]	1.0	2
nonfat	35	1/4 c	125	12.0	0.2	13	445	345	40	190	600	1.5	0.1	0.1	10	0.09	0.5	0.3	0.1	1.1	15[14]	1.4	2
Evaporated	250	1 c	340	17.5	20.0	25	660	510	60	265	765	1.9	0.2	0.4	600	0.1	0.8	0.5	0.1	1.6	20[14]	0.4	3
Condensed, sweetened	40	1 fl oz	120	3.0	3.5	20	105	95	10	50	140	0.4	0.08	0.1	100	0.03	0.2	0.1	0.02	0.3	4[14]	0.2	tr
Milk, human, U.S.	30	1 fl oz	21	0.3	1.3	2.1	10	4	1	5	16	0.05	0.01	0.01	70	0.004	0.01	0.1	0.003	0.07	2[14]	0.02	2
Milkshakes, commercial	270	10 fl oz	320	11.0	7.0	50	365	340	30	300	600	0.5	0.04	0.3	300	0.08	0.5	0.4	0.1	1.0	15[14]	0.6	tr

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Nutrient Composition Table—Continued

							Minerals								Vitamins								
Food	Weight g	Approximate Measure	Energy Kcal	Protein g	Fat g	Total Carbohydrate g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Molasses																							
Light	20	1 tbsp	50	0	0	13	35	10	9	3	185	u	u	0.9	0	0.01	0.01	[illegible]	u	u	u	0	0
Medium	20	1 tbsp	50	0	0	12	60	15	16	5	215	0.9	0.3	1.2	0	u	0.02	0.2	0.04	0.07	2	0	0
Blackstrap	20	1 tbsp	45	tr	0	11	135	15	52	20	585	u	u	3.2	0	0.02	0.04	0.4	u	[illegible]	u	0	0
Muffins																							
Bran	40	1 muffin	100	3.0	4.0	15	55	160	u	180	170	u	u	1.5	100	0.06	0.1	1.5	u	u	u	u	0
Cornmeal	40	1 muffin	130	3.0	4.0	19	40	70	20	190	55	u	u	0.7	100*	0.08	0.09	0.6	u	u	u	u	0
Plain or blueberry	40	1 muffin	120	3.0	4.0	17	40	60	10	175	50	0.5	0.09	0.6	50	0.07	0.08	0.6	0.02	0.2	3	0.1	0
Mushrooms, raw	35	1/2 c, sliced	10	1.0	0.1	2	2	40	5	5	145	0.1	0.04	0.3	tr	0.04	0.2	1.5	0.04	0.8	7	0	1
Mustard greens, boiled	70	1/2 c	15	1.5	0.3	3	95	20	10	10	155	0.2	0.06	1.2	4100	0.06	0.1	0.4	0.08	0.1	u	0	35
Mustard, prepared, yellow	5	1 tsp	4	0.2	0.2	0.3	4	4	2	65	5	0.03	0.07	0.1	0	u	u	u	u	u	u	0	0
Noodles, egg, cooked,																							
Unenriched	105	2/3 c	130	4.5	1.5	25	10	65	25	2	45	0.6	0.02	0.6	70	0.03	0.02	0.4	0.02	0.2	2	tr	0
Enriched	105	2/3 c	130	4.5	1.5	25	10	65	25	2	45	0.6	0.02	0.9	70	0.10	0.08	1.3	0.02	0.2	2	tr	0
Oils. See *Fats.*																							
Okra, boiled	105	10 pods	30	2.0	0.3	6	100	45	40	2	185	u	0.1	0.5	500	0.1	0.2	1.0	0.08	0.2	10	0	20
Olives																							
Green	25	5 large	20	0.2	2.5	0.2	10	4	5	465	10	0.02	0.09	0.3	60	u	u	u	0.01	0	3	0	0
Ripe	25	5 large	35	0.2	4.0	0.6	20	4	u	150	5	0.07	0.09	0.4	20	tr	tr	u	tr	tr	u	0	0
Onions																							
Green, raw, bulb and top	25	1/4 c, chopped or 3 onions	10	0.4	tr	2	15	10	3	1	60	0.07	0.01	0.3	500	0.01	0.01	0.1	u	0.4	10	0	8
Mature, dry raw	85	1/2 c, chopped	30	1.5	0.1	7	25	30	10	10	135	0.3	0.1	0.4	35*	0.02	0.04	0.2	0.1	0.1	8	0	8
	10	1 tbsp, 1/8 onion	4	0.2	tr	0.9	3	4	1	1	15	0.03	0.01	0.1	tr	tr	tr	tr	0.01	0.01	1	0	1
boiled	105	1/2 c, sliced	30	1.0	0.1	7	25	30	10	10	115	0.6	0.08	0.4	40*	0.03	0.03	0.2	0.1	0.1	10	0	8
Oranges, raw	140	1 medium	80	1.8	0.1	18	60	30	30	1	270	0.3	0.09	0.6	280	0.14	0.06	0.6	0.08	0.4	46	0	66
Orange juice, fresh or frozen	185	3/4 c	85	1.5	0.4	19	20	30	20	2	370	0.04	0.09	0.4	400	0.2	0.06	0.8	0.07	0.4	85	0	95
Oysters, raw																							
Eastern	120	6 oysters	80	10.0	2.0	4	115	170	40	90	145	90.0	4.0	6.6	350	0.2	0.2	3.0	0.6	0.3	u	21.6	u
Pacific	120	6 oysters	110	12.5	2.5	8	100	185	30	u	u	10.8	4.0	8.6	u	0.1	u	1.6	u	u	u	u	30
Pakchoy, raw	100	2/3 c	15	1.0	0.1	3	165	45	u	25	305	u	u	0.8	3000	0.06	0.1	0.8	u	u	u	0	25
Pancakes, plain	110	4, ea. 4 in diam.	245	7.5	10.0	35	230	280	15	610	170	0.9	0.06	1.2	300	0.2	0.2	0.8	0.4	0.8	10	u	0
Papaya, raw	225	1/2 fruit or 1 c, cubed	60	0.9	0.2	15	30	25	u	4	355	u	0.02	0.4	2700	0.06	0.06	0.4	u	0.5	u	0	85
Parsley, raw	5	1 tbsp, chopped	2	0.1	tr	0.3	5	2	2	2	25	u	0.02	0.2	300	tr	0.01	tr	0.01	0.02	2	0	8
Peaches, without skin																							
Raw, yellow	115	1 medium	40	0.6	0.1	10	10	20	12	1	200	0.2	0.06	0.5	1300	0.02	0.05	1.0	0.03	0.2	2	0	7
Canned, heavy syrup	150	2 halves and 3 tbsp juice	120	0.6	0.2	30	5	20	9	4	200	0.1	0.1	0.8	650	0.02	0.04	1.0	0.03	0.08	u	0	4
water pack	155	2 halves and 3 tbsp juice	50	0.6	0.2	12	5	20	9	4	210	u	0.08	0.4	700	0.02	0.04	1.0	u	u	u	0	4
Dried, sulfured, uncooked	65	5 halves	170	2.0	0.4	45	30	75	30	10	620	u	u	3.9	2500	tr	0.1	3.5	0.06	u	u	0	10

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbo-hydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phos-phorus mg	Mag-nesium mg	Sodium mg	Potas-sium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thia-min mg	Ribo-flavin mg	Niacin mg	Vitamin B-6 mg	Panto-thenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Peanuts, roasted, salted	30	1 oz, 30 nuts	85	7.5	14.0	5	20	115	50	120	190	0.9	0.1	0.6	0	0.09	0.04	4.9	0.1	0.6	8	0	0
Peanut butter	15	1 tbsp	95	4.0	8.0	3	10	60	25	95	100	0.4	0.09	0.3	0	0.02	0.02	2.4	0.06	0.3	3	0	0
Pears																							
Raw, with skin	180	1, 3½ in x 2½ in	100	1.0	0.7	25	15	20	15	3	215	u	0.3	0.5	30	0.03	0.07	0.2	0.03	0.1	9	0	7
Canned, syrup	150	2 halves and 3 tbsp juice	115	0.4	0.4	30	10	10	7	2	130	u	0.06	0.4	tr	0.02	0.04	0.2	0.02	0.3	9	0	2
water pack	155	2 halves and 3 tbsp juice	50	0.4	0.4	13	10	10	7	2	135	u	0.08	0.4	tr	0.02	0.04	0.2	u	u	u	0	2
Peas																							
Green, frozen, boiled	80	1/2 c	55	4.0	0.2	9	15	70	15	90	110	0.6	0.2	1.5	500	0.2	0.1	2.2	0.1	0.3	14	0	15
Canned, drained	85	1/2 c	75	4.0	0.4	14	20	65	10	200	80	0.7	0.1	1.6	500	0.08	0.05	0.7	0.04	0.1	5	0	7
Split, dry, cooked	100	1/2 c (1 oz, dry wt.)	115	8.0	0.3	20	10	90	8	15''	295	1.1	0.07	1.7	40	0.2	0.09	0.9	0.04	0.6	20	0	0
Peas and carrots, frozen, boiled	80	1/2 c	40	2.5	0.2	8	20	45	15	65	125	u	u	0.9	7400	0.2	0.05	1.0	0.08	0.2	u	0	6
Pecans	30	1 oz, 20 halves	200	2.5	20.0	4	20	80	40	tr	170	u	0.3	0.7	40	0.2	0.04	0.3	0.05	0.5	4	0	1
Peppers, hot (chili)																							
Green, canned sauce	15	1 tbsp	3	0.1	tr	1	1	2	u	u	u	u	u	0.1	100	tr	tr	0.1	u	u	u	0	10
Red, dry, chili powder	3	1 tsp	8	0.3	0.4	1	7	8	4	25	50	0.07	u	0.4	900	0.01	0.02	0.2	u	u	u	0	2
Peppers, sweet																							
Green, raw	75	1/2 c, chopped	15	0.9	0.1	4	5	15	15	10	155	0.2	0.07	0.5	300	0.06	0.06	0.4	0.2	0.2	5	0	95
Red, raw	90	1 medium	25	1.0	0.2	5	10	20	u	u	u	u	u	0.4	3300	0.06	0.06	0.4	u	0.2	20	0	150
Pickles, cucumber																							
Dill	135	1 large	15	0.9	0.3	3	35	30	1	1930	270	0.4	0.03	1.4	150	tr	0.03	tr	0.01	0.3	4	0	8
Sweet	35	1 medium	50	0.2	0.1	13	4	5	tr	u	u	0.05	0.07	0.4	30	tr	0.01	tr	tr	0.07	1	0	2
Relish, sweet	15	1 tbsp	20	0.1	0.1	5	3	2	u	105	u	0.01	0.05	0.1	u	0	0	0	u	u	0	0	tr
Pies																							
Apple, berry, rhubarb	160	1/6 of 9 in pie	400	3.5	17.5	60	15	35	5	475	125	0.1	0.1	0.5	50	0.03	0.03	0.6	0.06	0.2	3	0	2
Cherry, peach	160	1/6 of 9 in pie	410	4.0	18.0	60	20	40	u	480	165	0.06	0.1	0.5	700	0.03	0.03	0.8	u	u	u	0	tr
Cream, pudding type with meringue	150	1/6 of 9 in pie	380	7.5	18.0	50	105	150	u	380	210	u	u	1.1	300	0.05	0.20	0.3	u	1.4	u	u	tr
Custard	150	1/6 of 9 in pie	330	9.5	17.0	35	145	170	u	u	u	u	u	0.9	350	0.08	0.30	0.5	u	u	u	u	0
Lemon meringue	140	1/6 of 9 in pie	360	5.0	14.5	55	20	70	u	395	70	u	u	0.7	250	0.04	0.10	0.3	u	u	3	u	4
Mince	160	1/6 of 9 in pie	430	4.0	18.0	65	45	60	u	710	280	u	0.1	1.6	tr	0.10	0.05	0.6	u	u	u	u	2
Pecan	140	1/6 of 9 in pie	580	7.0	31.5	70	65	140	u	305	170	u	u	3.9	200	0.20	0.10	0.4	u	u	u	u	tr
Pumpkin	150	1/6 of 9 in pie	320	6.0	17.0	35	80	105	10	325	245	0.6	0.08	0.8	3800	0.05	0.20	0.8	0.06	0.6	5	u	tr
Sweet potato	150	1/6 of 9 in pie	325	7.0	17.0	36	105	130	u	330	250	u	u	0.8	3800	0.08	0.20	0.5	u	u	u	u	6
Pineapple, diced or crushed																							
Raw	155	1 c	80	0.6	0.3	20	25	10	20	2	225	0.3	0.1	0.5	100	0.1	0.05	0.3	0.1	0.2	15	0	35
Canned, in heavy syrup	130	1/2 c solids and liquid	95	0.4	0.2	25	15	6	10	2	120	0.3	0.2	0.4	60	0.1	0.02	0.2	0.1	0.1	3	0	9

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbo-hydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Pineapple, continued																							
in juice	125	1/2 c solids and liquid	70	0.4	0.2	17	15	8	15	1	180	0.3	0.1	0.6	80	0.1	0.04	0.2	0.1	0.2	u	0	15
water pack	125	1/2 c solids and liquid	50	0.4	0.1	13	15	5	u	1	120	u	u	0.4	80	0.1	0.02	0.2	u	u	u	0	8
Pineapple juice	190	3/4 c	105	0.8	0.6	25	30	15	20	2	280	u	0.1	0.6	100	0.1	0.04	0.4	0.2	0.2	u	0	15
Pinenuts, piñon	30	1 oz, 4 tbsp	180	3.5	17.0	6	3	170	u	u	u	u	u	1.5	10	0.4	0.07	1.3	u	u	u	u	tr
Pizza, cheese	65	1/8 of 14 in pizza	150	8.0	5.5	18	145	125	20	455	85	0.8	0.2	0.7	400	0.04	0.1	0.7	u	u	u	u	5
Sausage	65	1/8 of 14 in pizza	160	5.0	6.0	20	10	80	u	490	115	0.8	u	0.8	400	0.06	0.08	1.0	u	u	u	u	6
Plantain	285	1 banana 11 in x 2 in	310	3.0	1.0	82	20	80	u	15	1010	u	u	1.8	u	0.2	0.1	1.6	u	0.7	u	0	35
Plums, raw	70	1 medium	30	0.3	0.1	8	10	10	6	1	110	u	0.07	0.3	190	0.02	0.02	0.3	0.04	0.1	1	0	4
Canned, purple in heavy syrup	140	3 and 3 tbsp syrup	110	0.6	0.1	30	10	15	7	1	190	u	u	1.2	900	0.03	0.03	0.5	0.04	0.1	u	0	3
Popcorn with oil and salt	10	1 c	40	0.9	2.0	5	1	20	10	175	u	0.2	0.03	0.2	u	u	0.01	0.2	0.32	0.04	0	0	0
Pork																							
Chop, broiled																							
lean and fat	80	1 medium	300	19.5	24.5	0	10	210	15	45	215	u	u	2.7	0	0.8	0.2	4.5	0.3	0.5	3	0.4	0
lean only	50	1 medium	110	13.0	6.5	0	5	135	10	30	145	1.5	0.04	1.6	0	0.5	0.1	2.9	0.1	0.2	2	0.2	0
Loin, roasted																							
lean and fat	85	2½ in x 2½ in x ¾ in	310	21.0	24.0	0	10	220	20	50	235	u	0.05	2.7	0	0.8	0.2	4.8	0.3	0.5	1	0.5	0
Spareribs, braised	90	yield from ½ lb, raw wt.	400	18.5	35.0	0	15	220	u	85	300	u	u	4.7	0	0.8	0.4	6.1	u	u	u	0.6	0
Potatoes																							
Baked	200	1 large	140	4.0	0.2	35	15	100	45	5[11]	780	0.4	0.3	1.1	tr	0.2	0.07	2.7	0.5	0.8	20	0	30
Boiled, pared before cooking	135	1 medium	90	2.5	0.1	20	10	55	u	3[11]	285	0.4	0.1	0.7	tr	0.1	0.05	1.6	0.5	0.8	15	0	20
French-fried																							
commercial[14]	70	1 "order"	230	3.0	10.2	28	8	70	20	120	u	u	u	0.4	tr	0.1	0.04	2.4	0.2	u	5	0	8
frozen, reheated	100	20 strips	220	3.5	8.4	35	10	90	30	4[11]	660	0.3	0.3	0.8	tr	0.1	0.02	2.6	0.2	0.5	10	0	20
Mashed with milk	100	1/2 c	100	2.0	4.5	13	25	50	15	250	260	0.1	0.1	0.4	200	0.08	0.06	1.0	0.1	0.2	10	0	10
Potato chips	30	10 chips, 2 in diameter each	115	1.0	8.0	10	10	30	10	200	225	0.2	0.04	0.4	tr	0.04	0.01	1.0	0.04	0.1	2	0	3
Potato salad. See Salads.																							
Pretzels	30	10, 3-ring pretzels	120	3.0	1.5	25	5	40	u	800	80	0.3	0.04	0.5	0	0.01	0.02	0.4	0.01	0.2	u	tr	0
Prunes, dried, raw	50	5	130	1.0	0.3	35	25	40	u	4	365	u	0.1	2.0	800	0.04	0.08	0.8	0.1	0.2	tr	0	2
Cooked without sugar	125	1/2 c	120	1.0	0.3	35	25	40	u	4	350	u	0.2	1.9	800	0.04	0.06	0.8	u	u	u	0	1
Prune juice, canned	190	3/4 c	150	0.8	0.2	35	25	40	u	4	480	tr	0.04	2.0	800	0.02	0.02	0.8	u	u	u	u	4
Puddings																							
Almendrado	85	1/3 c and 2 tbsp sauce	100	2.7	4.3	14	35	90	u	35	90	u	u	0.3	250	0.02	0.08	0.03	0.02	0.3	8	0.4	tr
Apple Brown Betty	110	1/2 c	160	1.5	4.0	30	20	25	5	185	110	u	u	0.6	100	0.08	0.04	0.4	u	u	u	u	1
Capirotada	155	1/2 c	385	10.8	14.0	58	230	200	u	335	355	u	u	2.5	250	0.10	0.20	3.0	0.10	0.4	8	0.3	0
Chocolate, instant, packaged	130	1/2 c	160	5.0	3.0	30	185	120	u	180	170	u	u	0.4	180	0.04	0.20	0.2	u	u	u	u	0

Nutrient Composition Table—Continued

							Minerals								Vitamins								
Food	Weight g	Approximate Measure	Energy Kcal	Protein g	Fat g	Total Carbohydrate g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Puddings, continued																							
Custard	130	1/2 c	150	7.0	7.5	15	150	155	u	105	195	u	u	0.6	450	0.06	0.2	0.2	u	u	4	u	tr
Rice with raisins	130	1/2 c	200	5.0	4.0	35	130	125	u	95	235	0.4	0.04	0.6	150	0.04	0.2	0.2	u	u	5	u	tr
Tapioca	80	1/2 c	110	4.0	4.0	14	85	90	u	130	110	u	0.04	0.4	260	0.04	0.2	0.1	u	u	2	u	0
Vanilla, home recipe	130	1/2 c	140	4.5	5.0	20	150	115	u	85	175	u	0.05	tr	200	0.04	0.2	0.2	u	u	u	u	0
Pumpkin, canned	245	1 c	80	2.5	0.7	19	60	65	30	5[11]	580	u	0.3	1.0	15,700	0.07	0.1	1.5	0.1	1.0	4	0	10
Radishes, raw	45	5 large	7	0.4	tr	1	10	10	7	10	130	0.1	0.04	0.4	5	0.01	0.01	0.1	0.03	0.08	10	0	10
Raisins	35	1/4 c	100	0.9	0.1	30	20	35	10	10	275	0.06	0.08	1.3	10	0.04	0.03	0.2	0.08	0.2	1	0	tr
Rhubarb, cooked with sugar	135	1/2 c	190	0.7	0.2	50	105	20	20	2	275	0.1	0.1	0.8	100	0.02	0.07	0.4	0.03	0.09	10	0	8
Rice cooked, salt added																							
Brown	130	2/3 c	160	3.5	0.8	35	15	95	40	370	90	0.8	0.1	0.7	0	0.1	0.03	1.8	0.2	0.5	10	0	0
White, enriched	135	2/3 c	150	3.0	0.1	35	15	85	10	515	40	0.5	0.07	1.2	0	0.2	0.01	1.4	0.05	0.3	1	0	0
Precooked, instant	110	2/3 c	120	2.5	tr	25	3	20	u	300	u	0.2	u	0.9	0	0.1	u	1.1	u	u	u	0	0
Rolls and buns																							
Danish pastry	65	1, of 4 in diameter	270	5.0	15.5	30	35	70	15	240	75	u	u	0.6	200	0.04	0.1	0.5	u	u	5	u	tr
Hamburger or frankfurter bun, enriched	40	1 average	120	3.5	2.0	20	30	35	10	200	40	0.2	0.08	0.8	tr	0.1	0.07	0.9	u	u	5	u	0
Hard rolls, enriched	50	1 large	160	5.0	1.5	30	25	45	15	315	50	0.6	u	1.2	tr	0.1	0.1	1.4	u	u	6	0	0
Plain pan rolls, white, enriched	30	1 small	85	2.5	1.5	15	20	25	10	140	25	0.4	u	0.5	tr	0.08	0.05	0.6	0.01	0.09	4	u	0
Rutabagas, boiled	85	1/2 c, cubed	30	0.8	0.1	7	50	25	12	4	140	u	u	0.2	500	0.05	0.05	0.7	0.08	0.1	u	0	20
Salads																							
Chef's (lettuce w/ham, cheese, dressing)[10]	u	1 serving	285	13.0	24.0	3	150	185	u	u	u	u	u	2.2	1250	0.2	0.2	1.2	u	u	u	u	13
Potato, home recipe	125	1/2 c	120	3.5	3.5	20	40	80	u	650	400	0.3	u	0.8	150	0.1	0.08	1.4	u	u	u	u	14
Tuna fish	100	1/2 c	170	15.0	10.0	4	20	145	u	u	u	u	u	1.3	250	0.04	0.1	5.1	u	u	u	u	1
Salad dressings																							
Blue cheese	15	1 tbsp	75	0.7	8.0	1	10	10	u	165	5	0.04	u	tr	30	tr	0.02	tr	u	u	u	tr	tr
French, regular	15	1 tbsp	65	0.1	6.0	3	2	2	2	220	15	0.01	u	0.1	u	u	u	u	u	u	u	0	u
low-calorie	15	1 tbsp	15	0.1	0.7	3	2	2	u	125	15	u	u	0.1	u	u	u	u	u	u	u	0	u
Italian, regular	15	1 tbsp	85	tr	9.0	1.0	2	1	1	315	2	0.02	0.1	tr	tr	tr	tr	tr	0	0	0	0	0
low-calorie	15	1 tbsp	10	tr	0.7	0.4	tr	1	u	120	2	u	u	tr	tr	tr	tr	tr	0	0	0	0	0
Mayonnaise	15	1 tbsp	100	0.2	11.0	0.3	3	4	tr	85	5	0.02	0.04	0.1	40	tr	0.01	tr	u	0.02	0	0	0
Salad dressing	15	1 tbsp	65	0.2	6.5	2.0	2	4	tr	90	1	0.08	u	tr	30	tr	tr	tr	0	0.02	0	0	0
Thousand Island, or Louie-type	15	1 tbsp	80	0.1	8.0	2.5	2	3	u	110	20	0.02	u	0.1	50	tr	tr	tr	u	u	u	u	tr
Salmon. See Fish.																							

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Minerals								Vitamins								
	g		Kcal	g	g	g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Sandwiches																							
Bacon, lettuce, tomato on white bread	150	1 average	280	7.0	15.5	30	55	90	u	u	u	u	u	1.5	850	0.2	0.1	1.5	u	u	u	u	15
Egg salad on white bread	140	1 average	280	10.5	12.5	30	70	155	u	u	u	u	u	2.4	600	0.2	0.02	1.0	u	u	u	u	2
Fish fillet, fried on bun[14]	135	1 average	410	15.0	21.5	37	95	235	20	780	u	u	u	1.6	80	0.2	0.4	2.9	0.1	u	20[14]	0.8	2
Ham and cheese on white bread[13]	u	1 average	380	20.0	19.0	30	215	240	u	u	u	u	u	3.1	300	0.4	0.3	2.5	u	u	u	u	0
Hamburger on bun[14]	95	1 regular	250	13.0	9.6	28	50	120	15	540	u	u	u	2.6	180	0.2	0.4	3.7	0.1	u	20[14]	0.8	4
"Big Mac"[14]	185	1 large	580	26.0	32.0	40	180	290	30	1080	u	u	u	3.8	200	0.8	0.6	6.5	0.2	u	30[14]	1.5	5
Tuna salad on white bread	105	1 average	280	11.0	14.0	25	50	135	u	u	u	u	u	1.2	250	0.1	0.1	4.0	u	u	u	u	1
Sashimi. See *Fish*, tuna, raw.																							
Sardines. See *Fish*.																							
Sauces																							
Butterscotch	45	2 tbsp	200	0.5	7.0	35	40	25	u	u	u	u	u	1.4	300	tr	tr	tr	u	u	u	0	0
Cheese	40	2 tbsp	65	3.0	5.0	2	80	65	u	u	u	u	u	0.1	200	0.01	0.08	0.1	u	u	u	u	tr
Chocolate																							
thin syrup	40	2 tbsp	100	0.9	0.8	25	7	35	u	u	u	u	0.2	0.6	tr	0.01	0.03	0.2	u	u	u	0	0
fudge type	40	2 tbsp	125	2.0	5.0	20	50	60	u	35	105	u	u	0.5	60	0.02	0.08	0.2	u	u	u	tr	0
Custard	70	1/4 c	85	3.5	4.0	10	80	80	u	u	u	u	u	0.4	250	0.04	0.2	0.1	u	u	u	0	tr
Hard sauce	20	2 tbsp	95	0.1	5.5	12	2	1	u	u	u	u	u	tr	250	tr	tr	tr	0	0	0	[illegible]	0
Hollandaise	50	1/4 c scant	180	2.0	18.5	0.4	25	80	u	u	u	u	u	0.9	1000	0.03	0.04	tr	u	u	u	0	tr
Soy	35	2 tbsp	25	2.0	0.5	4	30	40	u	2665	135	u	u	1.7	0	0.01	0.09	0.1	u	u	u	u	0
Tartar	15	1 tbsp	75	0.2	8.0	0.6	3	4	u	100	10	u	u	0.1	30	tr	tr	tr	u	u	u	0	tr
Tomato catsup	15	1 tbsp	15	0.3	0.1	4	3	10	3	155	55	0.04	0.09	0.1	200	0.01	0.01	0.2	0.02	u	tr	0	2
White, medium	125	1/2 c	200	5.0	15.5	11	145	115	20	475	175	0.5	0.05	0.2	600	0.06	0.2	0.2	0.06	0.8	1	0.2	1
Sauerkraut, canned	120	1/2 c	20	1.0	0.2	5	40	20	u	880	165	1.0	0.1	0.6	60	0.04	0.04	0.2	0.2	0.1	u	0	16
Sausages																							
Bologna	30	1 slice, 4½ in x 1/8 in	85	3.5	8.0	0.3	2	35	u	370	65	0.5	tr	0.5	0	0.05	0.06	0.7	0.03	u	1	u	0
Frankfurter (all-meat)	45	1 average	135	5.5	12.0	0.7	2	45	u	u	u	0.7	0.04	0.7	0	0.07	0.09	1.1	0.06	0.2	1	0.6	0
Liverwurst	30	1 oz	85	4.5	7.0	0.5	3	70	5	u	u	2.2	0.9	1.5	1800	0.06	0.4	1.6	0.06	0.8	6	4.2	tr
Luncheon meat, pork, cured	30	1 oz	85	4.5	7.0	0.4	3	30	u	350	65	u	0.02	0.6	0	0.09	0.06	0.9	u	0.2	1	u	0
Pork sausage, links	40	3 links	185	7.0	17.0	tr	3	60	5	375	105	0.2	0.06	0.9	0	0.3	0.1	1.5	0.07	0.3	1	0.2	0
Salami, dry	30	3 small slices	130	6.5	11.0	0.3	4	80	u	u	u	u	u	1.0	0	0.1	0.07	1.5	0.04	u	1	u	0
Vienna, canned	50	3 sausages	115	6.5	9.5	0.1	3	75	u	u	u	u	u	0.9	0	0.03	0.06	1.2	0.04	u	1	u	0
Scallops																							
Breaded, fried	95	3½ oz	190	17.0	8.0	10	u	u	u	u	u	u	0.1	u	0	u	u	u	u	0.1	15	u	0
Steamed	95	3½ oz	105	22.0	1.5	3	110	320	u	250	455	u	0.1	2.8	0	u	0.08	1.3	u	u	18	1.1	u
Sesame seeds, hulled	40	1/4 c	220	7.0	20.0	7	40	220	7	u	u	u	0.6	0.9	0	0.07	0.05	2.0	u	u	25	0	0
Sherbet, orange	95	1/2 c	135	1.0	2.0	30	50	75	8	45	100	0.6	0.02	0.1	90	0.01	0.04	tr	0.01	tr	7[14]	0.1	2
Shrimp, canned	85	3 oz	100	20.5	0.9	0.6	100	225	45	u	105	1.8	0.1	2.7	60	0.01	0.03	1.5	0.06	0.2	6	u	0
French-fried	85	3 oz	190	17.5	9.5	8	60	160	40	160	195	0.8	0.3	1.8	u	0.03	0.06	2.5	0.05	0.3	5	0.6	0
Soups																							
Albondiga (meatballs in tomato broth)	240	1 c with 4 meatballs	340	18.5	21.4	17	25	175	u	180	460	u	u	3.6	500	0.2	0.2	5.0	0.6	0.7	10	1.2	8

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Nutrient Composition Table—Continued

Food	Weight	Approximate Measure	Energy	Protein	Fat	Total Carbohydrate	Calcium	Phosphorus	Magnesium	Sodium	Potassium	Zinc	Copper	Iron	Total Vitamin A Activity	Thiamin	Riboflavin	Niacin	Vitamin B-6	Pantothenic Acid	Folacin (free)	Vitamin B-12	Vitamin C
							Minerals								Vitamins								
	g		Kcal	g	g	g	mg	mg	mg	mg	mg	mg	mg	mg	IU	mg	mg	mg	mg	mg	mcg	mcg	mg
Soups, continued																							
Bean, with pork	250	1 c	170	8.0	6.0	22	65	130	u	1010	395	u	u	2.3	650	0.1	0.08	1.0	u	u	u	u	3
Bouillon, broth, consomme	240	1 c	30	5.0	0	3	tr	30	u	780	130	u	0.02	0.5	tr	tr	0.02	1.0	u	u	u	u	0
Cream soups, canned,																							
diluted with water	240	1 c	65	2.5	1.5	10	25	40	u	985	120	u	u	0.7	300	0.05	0.1	0.7	u	u	u	u	u
diluted with milk	245	1 c	150	7.0	6.0	17	175	160	u	1070	300	u	u	0.7	500	0.07	0.3	0.7	u	u	10	u	tr
Chicken noodle, from dry mix	240	1 c	55	2.0	1.5	8	7	20	u	580	20	0.1	0.1	0.2	50	0.07	0.05	0.5	u	u	u	u	0
Clam chowder, Manhattan	245	1 c	80	2.0	2.5	12	35	45	u	940	185	1.4	u	1.0	900	0.02	0.02	1.0	u	u	8	u	u
Onion	240	1 c	35	1.5	1.0	6	10	10	u	690	60	0.07	u	0.2	tr	tr	tr	tr	u	u	u	u	2
Split pea	245	1 c	140	8.5	3.0	20	30	150	15	940	270	1.0	0.2	1.5	450	0.2	0.2	1.5	0.1	0.2	2	0.4	tr
Tomato	245	1 c	90	2.0	2.5	16	15	35	15	970	230	0.2	0.2	0.7	1000	0.05	0.05	1.0	0.06	0.2	5	0	10
Vegetable beef	245	1 c	80	5.0	2.0	10	10	50	25	1050	180	0.4	0.1	0.7	2700	0.05	0.05	1.0	0.07	0.2	5	u	u
Spaghetti																							
Canned, with tomato sauce and meatballs[11]	210	1 can, 7½ oz	250	10.4	12.8	23	20	120	u	1035	375	u	0.3	2.2	1030	0.15	0.2	3.4	u	u	u	u	u
Home recipe, with tomato sauce																							
with cheese	250	1 c	260	9.0	9.0	35	80	135	30	955	410	0.2	0.3	2.3	1100	0.2	0.2	2.5	0.1	0.8	2	0.6	15
with meatballs	250	1 c	330	18.5	11.5	40	125	235	40	1010	665	3.5	0.4	3.7	1600	0.2	0.3	4.0	0.4	0.5	15	0.8	20
Spinach, fresh or frozen, boiled	90	1/2 c	20	2.5	0.2	3	90	40	60	50	300	0.5	0.1	2.0	7300	0.06	0.1	0.4	0.2	0.2	50	0	20
Sprouts, raw																							
Alfalfa	100	1 c, packed	40	5.0	0.6	5	30	u	u	u	u	1.0	u	1.4	u	0.1	0.2	1.5	u	u	u	0	15
Mung bean	100	1 c	35	4.0	0.2	7	20	65	u	5	235	0.9	u	1.4	20	0.1	0.1	0.8	u	u	u	0	20
Soybean	100	1 c	50	6.5	1.5	6	50	70	u	u	u	1.6	u	1.1	80	0.2	0.2	0.8	u	u	u	0	15
Squash																							
Summer, boiled	90	1/2 c	10	0.8	0.1	3	20	20	15	1	125	0.2	0.07	0.4	350	0.04	0.07	0.7	0.2	0.1	2	0	8
Winter																							
baked	100	1/2 c	65	2.0	0.4	15	30	50	17	1	470	u	u	0.8	430	0.05	0.1	0.7	0.09	0.3	u	0	15
boiled	120	1/2 c	45	1.5	0.4	10	25	40	17	1	315	u	u	0.6	4300	0.05	0.1	0.5	0.1	0.3	u	0	10
Strawberries																							
Fresh	100	2/3 c whole	35	0.7	0.5	8	20	20	12	1	165	0.08	u	1.0	60	0.03	0.07	0.6	0.06	0.3	15	0	60
Frozen, sweetened	170	2/3 c	180	0.7	0.3	40	20	25	14	2	180	u	u	1.0	50	0.03	0.1	0.9	0.07	0.2	15	0	95
Sugar																							
Brown	220	1 c, packed	820	0	0	210	185	40	u	65	755	u	0.7	7.5	0	0.02	0.07	0.4	u	u	u	0	0
White																							
granulated	200	1 c	770	0	0	200	0	0	0	2	5	0.1	0.04	0.2	0	0	0	0	0	0	0	0	0
	4	1 tsp	15	0	0	4	0	0	0	tr	tr	tr	tr	tr	0	0	0	0	0	0	0	0	0
powdered	8	1 tbsp	30	0	0	8	0	0	0	tr	tr	tr	tr	tr	0	0	0	0	0	0	0	0	0
Sunflower seeds, hulled	35	1/4 c	200	8.5	17.0	7	45	305	13	10	335	u	0.6	2.6	20	0.7	0.08	2.0	0.4	0.5	u	0	0

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Nutrient Composition Table—Continued

Food	Weight g	Approximate Measure	Energy Kcal	Protein g	Fat g	Total Carbohydrate g	Minerals								Vitamins								
							Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (free) mcg	Vitamin B-12 mcg	Vitamin C mg
Sweet potatoes																							
Baked in skin	145	1 potato, 5 in x 2 in	160	2.5	0.6	36	45	65	45	15	340	1.0	0.2	1.0	9200	0.1	0.08	0.8	0.05	1.0	10	0	25
Boiled in skin	130	1/2 c mashed	150	2.0	0.5	36	40	60	u	15	620	u	0.2	0.9	9200	0.1	0.08	0.8	0.3	1.0	9	0	20
Candied	105	1/2 medium	180	1.5	3.5	36	40	45	u	45	200	u	0.06	0.9	6600	0.06	0.04	0.4	u	u	7	0	10
Syrup, maple-flavored, artificial	20	1 tbsp	50	0	0	13	20	2	u	2	35	tr	0.08	0.2	0	0	0	0	0	0	0	0	0
Tacos, beef	80	1 taco	180	11.0	8.5	9	135	180	u	200	210	u	u	2.0	530	0.07	0.1	2.3	0.3	0.3	25	0.7	3
Tamales, canned	100	3½ oz	140	4.5	7.0	14	20	40	10	665	u	0.9	0.05	1.2	u	u	u	u	u	u	u	u	u
Home recipe, chicken	130	2 tamales	275	8.3	23.7	8	100	80	u	80	90	u	u	0.9	2800	0.05	0.1	2.7	0.2	0.3	1	0.1	7
Tea, instant	1	1/2 tsp	3	0	0	1	tr	u	4	u	45	u	u	tr	0	0	tr	tr	u	u	u	0	0
Tofu, soybean curd	120	1 piece, 2½ in x 2¾ in x 1 in	85	9.5	5.0	3	155	150	130	10	50	u	u	2.3	0	0.07	0.04	0.1	u	u	u	0	0
Tomatoes, raw	135	1 medium	25	1.5	0.2	6	15	35	20	4	300	0.3	0.1	0.6	1100	0.07	0.05	0.9	0.1	0.4	25	0	30
Canned	120	1/2 c	25	1.0	0.2	5	5	25	15	155	260	0.2	0.2	0.6	1100	0.06	0.04	0.8	0.1	0.3	10	0	20
Tomato juice, canned	180	3/4 c	35	1.5	0.2	8	15	35	20	365	415	u	0.1	1.6	1500	0.09	0.05	1.5	0.3	0.4	18	0	30
Tomato paste	130	1/2 c	110	4.5	0.5	25	35	90	25	50[11]	1120	u	0.9	4.6	4300	0.3	0.2	4.0	0.5	0.6	25	0	65
Tongue, beef, braised	100	3½ oz	250	21.5	17.0	0.4	5	120	16	60	165	u	0.07	2.2	0	0.05	0.3	3.5	0.1	2.0	u	u	0
Tortillas																							
Corn, lime-treated	30	1, of 6 in diameter	65	1.5	0.6	14	60	40	30	u	u	0.03	0.06	0.9	tr	0.04	0.02	0.3	0.02	0.03	tr	0	0
White flour	30	1, of 6 in diameter	110	3.0	1.0	20	4	50	15	250	30	u	u	1.0	0	0.08	0.04	0.5	0.02	0.03	5	0	0
Tostada with beans and small portion of cheese	210	1 tostada	335	11.6	17.6	35	195	245	u	350	425	u	u	3.2	1650	0.3	0.2	1.3	0.2	0.4	10	0.2	10
Tuna. See *Fish*.																							
Turkey, roasted																							
Light meat	85	2 slices, each 4 in x 2 in x ¼ in	150	28.0	3.5	0	7	200	20	70	350	1.8	0.2	1.0	u	0.04	0.1	9.5	0.3	0.5	3	0.4	0
Dark meat	85	4 slices, each 2½ in x 1⅝ in x ¼ in	170	25.5	7.0	0	7	200	20	85	340	3.7	0.2	2.0	u	0.03	0.2	3.5	0.3	1.0	7	0.4	0
Turnips, boiled	80	1/2 c, cubed	20	0.6	0.2	4	25	20	10	25	145	0.07	0.03	0.3	tr	0.03	0.04	0.2	0.06	0.08	u	0	15
Turnip greens, boiled	70	1/2 c	15	1.5	0.2	3	135	25	20	u	u	u	u	0.8	4600	0.1	0.2	0.4	0.7	0.1	u	0	50
Veal cutlet, broiled	85	3 oz	180	23.0	9.5	0	10	195	20	55	280	4.1	0.04	2.7	0	0.06	0.2	4.5	0.3	0.8	15	1.6	0
Vinegar, cider	15	1 tbsp	2	tr	0	1	1	1	u	tr	15	0.02	0.01	0.1	0	0	0	0	0	0	0	0	0
Waffles																							
Made from mix	75	1, of 7 in diameter	210	6.5	8.0	27	180	260	20	515	145	u	u	1.0	200	0.1	0.2	0.7	u	0.5	u	u	0
Frozen[10]	45	2 sections	120	3.0	4.0	16	130	195	u	340	u	u	u	0.5	u	0.04	0.06	0.5	u	u	u	u	0
Walnuts, English	100	1 c halves	650	15.0	64.0	16	100	380	135	2	450	2.8	0.9	3.1	30	0.3	0.1	0.9	0.7	0.9	45[14]	0	2
	15	2 tbsp, chopped	100	2.5	10.0	3	15	60	20	tr	70	0.4	0.1	0.4	10	0.06	0.02	0.2	0.1	0.1	5[14]	0	tr

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Nutrient Composition Table—Continued

							Minerals								Vitamins								
Food	*Weight* g	*Approximate Measure*	*Energy* Kcal	*Protein* g	*Fat* g	*Total Carbohydrate* g	Calcium mg	Phosphorus mg	Magnesium mg	Sodium mg	Potassium mg	Zinc mg	Copper mg	Iron mg	Total Vitamin A Activity IU	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B-6 mg	Pantothenic Acid mg	Folacin (total) mcg	Vitamin B-12 mcg	Vitamin C mg
Watercress, raw	35	10 sprigs	5	0.8	0.1	1	55	20	5	20	100	u	0.03	0.6	1700	0.03	0.06	0.3	0.04	0.1	70[14]	0	30
Wheat bran, crude	30	1 oz	60	4.5	1.0	17	35	355	136	3	315	2.7	0.4	4.2	0	0.2	0.1	6.0	0.2	0.1	u	0	0
Wheat germ, raw	30	1 oz	100	7.5	3.0	13	20	315	90	tr	230	1.7	0.7	2.6	u	0.6	0.2	1.0	0.3	0.9	80	0	0
Toasted	30	1 oz	120	9.0	3.5	15	15	350	90	tr	285	1.7	0.7	2.5	90	0.5	0.2	1.5	0.3	0.4	u	0	0
Wine, dessert (18.8%)	105	3½ fl oz	140	0.1	0	8	10	u	5	4	75	0.1	0.08	0.4	u	0.01	0.02	0.2	0.04	0	0	0	0
Table (12.2%)	100	3½ fl oz	85	0.1	0	4	10	10	10	5	95	0.1	0.01	0.4	u	tr	0.01	0.1	0.04	0	0	0	0
Yeast																							
Dry, active	5	1 tbsp	20	2.5	0.1	3	3	90	3	4	140	u	0.2	1.1	tr	0.2	0.4	2.5	0.1	0.6	7	0	0
Brewer's, debittered	5	1 tbsp	25	3.0	0.1	3	15	140	10	10	150	u	u	1.4	tr	1.2	0.3	3.0	0.1	0.6	9	0	0
Yogurt																							
Low-fat																							
plain	230	8 fl oz carton	145	12.0	3.5	16	415	325	40	160	530	2.0	u	0.2	150	0.1	0.5	0.3	0.1	1.3	25[14]	1.3	2
fruit, sweetened	230	8 fl oz carton	225	9.0	2.6	42	315	245	30	120	400	1.5	u	0.1	110	0.08	0.4	0.2	0.1	1.0	30[14]	1.0	1
Regular																							
plain	230	8 fl oz carton	140	8.0	7.5	11	275	215	25	105	350	1.3	u	0.1	280	0.07	0.3	0.2	0.1	0.9	20[14]	0.8	2

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Appendix D

Minimum Proficiency Levels for Nutrition Education

Preschool Through Grade Twelve

Through the enactment of state legislation and participation in federal child nutrition programs, California has made a major commitment to nutrition education. With financial support provided by the Child Nutrition Facilities Act (Senate Bill 120) and the National School Lunch Act and Child Nutrition Amendments (Public Law 95-166), California has established a comprehensive nutrition education and training program.

The goal of the Nutrition Education and Training Program is to enable individuals to develop the knowledge and skills necessary to make wise food choices, which will contribute to their overall health and well-being throughout their lives.

In an attempt to achieve systematically the goal of nutrition education, minimum proficiency levels for students were developed jointly by staff members of the State Department of Education, food service representatives, nutrition education specialists, teachers, and curriculum specialists. Those levels of performance are identified in the charts that appear on the following pages. The charts present an outline of expected performance in nutrition education for students enrolled in preschool, kindergarten, primary grades, upper elementary grades, and junior and senior high schools. The minimum proficiency levels support the nutrition concepts found in the *Health Instruction Framework for California Public Schools,* which was adopted by the State Board of Education in 1977. As nutrition education specialists, teachers, food service personnel, and aides design classroom activities, the minimum proficiency levels will provide a foundation for nutrition instruction, curriculum development, and evaluation.

Projects funded under the Child Nutrition Facilities Act or Public Law 95-166 will use the minimum proficiency levels as a basis for their nutrition education programs. Persons responsible for planning and implementing nutrition education programs should plan to address each performance standard required for students to achieve proficiency in nutrition education. They may, in addition, expand the performance standards to include additional activities.

Topics	Minimum standards of performance in nutrition	
	Preschool age/kindergarten (Ages three—five)	Early childhood (Primary grades, ages six—eight)
A. Food Choices Daily food intake is related to the attainment of optimum health. • Food classifications make it easier to select foods that will help a person achieve a nutritionally adequate diet. • A variety of foods can be combined to help ensure a nutritionally adequate diet that includes the nutrients that are necessary for optimum health.	*Students will:* Name a variety of foods.	*Students will:* Classify the foods in the Basic Four Food Groups. Identify the number of servings needed daily from each of the Basic Four Food Groups. Identify the food groups that should be included within the School Lunch Pattern.
• Foods contain the nutrients the human body requires to function properly, and the interrelationships among nutrients are important for promoting health.	Identify one reason why we need food.	Identify two diet-related health problems and the kinds of foods associated with the problems. Identify two sequential steps in the process of digestion.
• Nutritional needs vary for individuals.		Identify one activity which requires less energy (from food) and one activity which requires more energy (from food).
• Food is a component of the ecosystem, and many products can be combined for appropriate menus. • Animal and plant products are substances of the food supply and are components of the ecosystem.	Classify foods as being of plant or animal origin.	Classify plant foods as fruits, vegetables, or grains. Classify animal foods as meat, poultry, milk, eggs, or fish.

Nutrition Education Program

education, according to developmental levels of students

Preadolescent (Upper elementary, ages nine—eleven)	Adolescent (Junior high, ages twelve—fifteen)	Young adult (High school, ages sixteen—eighteen)
Students will: Identify one major nutrient provided by each of the Basic Four Food Groups. Plan a nutritionally adequate meal that would ensure a nutritious eating pattern. Specify one reason why the School Lunch Pattern contributes to nutritional health.	*Students will:* Select menu alternatives to maintain a nutritionally adequate meal. Select a school lunch that meets personal nutrient and caloric needs.	*Students will:* Distinguish facts from fallacies concerning the nutritional value of foods. Given limited food resources, select a nutritionally adequate diet based on nutrient criteria.
Name the six nutrient groups. Identify at least one function for each of the six major nutrient groups. Recognize the pathway of food during the process of digestion.	Recognize that a calorie is a measure of the energy value of food.	Identify the purpose of the recommended dietary allowances. Identify the physiological processes involved in the digestion, absorption, and metabolism of nutrients.
Cite two reasons for the difference in the amount of food required by individuals.	Identify at least two effects food choices have on physical fitness and physical appearance.	Identify at least two ways that food habits and exercise, environment, work, and leisure activities interact to affect health. Explain how stress influences nutritional needs. Plan a nutritionally adequate diet that will result in a person's achieving or maintaining desired weight.
Identify plant or animal foods that are a major source of carbohydrate, protein, or fat.	Specify a combination of two plant foods that contain complementary proteins. Identify one reason to include whole grains in a diet.	Identify one way a vegetarian can obtain a nutritionally balanced diet.

Topics	Minimum standards of performance in nutrition	
	Preschool age/kindergarten (Ages three—five)	Early childhood (Primary grades, ages six—eight)
B. Factors Influencing Food Choices Life-styles, peers, and individual family resources reflect similarities and differences in food choices. • Eating patterns are formed by interrelationships of physical, social, psychological, environmental, and cultural influences.	*Students will:* Identify one practice that makes mealtime enjoyable. Identify one influence on food choices.	*Students will:* Identify two aspects of a school dining environment that may affect behavior. Specify two nutritious snack foods that could be brought to school for class parties. Recognize that families have different ways of selecting and serving food.
C. Food-Related Careers Needs, roles, responsibilities, and educational requirements affect choices in food and health nutrition-related careers. • Food-related occupations exist for society's purposes and contribute to society's ways of living.	Identify the roles of the farmer, food truck driver, storekeeper, and family members in food availability.	Identify two titles of people who process, prepare, or serve food. Identify titles of two health professionals who provide advice on food selection in relationship to dental and general health.

Nutrition Education Program

education, according to developmental levels of students

Preadolescent (Upper elementary, ages nine—eleven)	Adolescent (Junior high, ages twelve—fifteen)	Young adult (High school, ages sixteen—eighteen)
Students will: Identify how home and/or social eating environments influence food selection. Identify two ways aesthetic and sensory qualities influence food choices. Specify one example of a food associated with a different country/community and its nutrient contribution.	*Students will:* Identify how an emotional feeling influences eating behavior. Identify how different cultural food patterns supply nutritionally adequate diets.	*Students will:* Identify how social conditions influence eating behavior. Identify one major nutritional problem in other areas of the world and a possible solution to the problem.
Identify the role of the sanitarian, nutritionist, dietitian, and research scientist.	Identify the career possibilities in the following food-related fields: consumer food advocacy, agriculture, and food services.	Identify the educational requirements of two specific careers in nutrition, food technology, consumerism, and food safety. Identify contributions of nutrition knowledge to other disciplines.

Minimum Proficiency Levels for California's

	Minimum standards of performance in nutrition	
Topics	*Preschool age/kindergarten* *(Ages three—five)*	*Early childhood* *(Primary grades, ages six—eight)*
D. Consumer Competencies Effective utilization of existing resources may enhance the potential for satisfying individual and family nutritional needs and wants. • Merchandising techniques influence food selection. • The consumers, through their food choices, affect the production and distribution of food. • Labeling provides consumers information to make satisfying food choices.	*Students will:* Identify one purpose of television commercials. Recognize what can be done to avoid being wasteful when serving food.	*Students will:* Identify how advertisements influence selection of breakfast and snack foods. Identify one way of decreasing food waste during lunch at school. Given a food label, recognize the main ingredient in the product.
E. Food Handling* The quality and safety of foods are influenced by handling, processing, and preparing of foods. • Food production is influenced by technology and environmental factors. • Food availability and quality is dependent upon food handing techniques. • Sanitation practices in food processing and preparation are necessary for optimum health. *Note: Handling means everything that happens to food while it is being grown, processed, preserved, stored, and prepared for eating.	Identify what makes plants grow. Specify why and how persons should wash their hands before food is handled or eaten. Identify one way of preparing food for eating. Identify one way to store food that helps to keep it fresh and clean.	Identify two sanitation procedures that should be practiced when preparing food. Identify two ways of cooking food. Identify two foods that must be stored at a cool temperature.

education, according to developmental levels of students

Preadolescent (Upper elementary, ages nine—eleven)	Adolescent (Junior high, ages twelve—fifteen)	Young adult (High school, ages sixteen—eighteen)
Students will: Specify one way students can improve the environment in the school lunchroom. Specify one way a student can have an influence on the school lunch menu selection. Use unit pricing to get the best buy when purchasing snack foods.	*Students will:* Specify one way a consumer can influence decisions made in the food industry. Specify one way the student can influence the school food service program. Identify the required and optional information found on food labels. Specify two major factors that affect cost, quality, availability, or variety of food in the marketplace.	*Students will:* Evaluate nutrition claims made in the merchandising and advertising of food. Use nutritional labels to compare the nutritional value of foods. Identify two criteria for evaluating the validity of nutrition information. Identify two ways the consumer can decrease the food budget without sacrificing the nutritional quality of the diet. Identify responsibilities of local, state, and federal agencies in determining requirements for school food service programs.
Identify two factors which affect the yield and quality of food crops. Identify two ways to prevent food-borne illnesses. Identify two ways of food preparation which maximize nutrient retention.	Identify two organisms that may cause food-borne illness and two foods that are particulary susceptible to such organisms. Identify three ways of cooking food to maximize nutrient retention. Identify three methods of preserving food at home. Recognize one local, one state, and one federal governmental agency responsible for food sanitation and safety enforcement.	Identify one reason for the use of pesticides and one reason against the use of pesticides. Identify reasons for two sanitation precautions that should be followed by food service personnel. Specify one advantage and disadvantage of food processing.

Appendix E

Dietary Guidelines for Americans

What should you eat to stay healthy?*

Hardly a day goes by without someone trying to answer that question. Newspapers, magazines, books, radio, and television give us a lot of advice about what foods we should or should not eat. Unfortunately, much of this advice is confusing.

Some of this confusion exists because we do not know enough about nutrition to identify an ideal diet for each individual. People differ and their food needs vary, depending on their age, sex, body size, physical activity, and other conditions such as pregnancy or illness.

But today, what advice should you follow in choosing and preparing the best foods for you and your family?

The guidelines below are suggested for most Americans. They do not apply to people who need special diets because of diseases or conditions that interfere with normal nutrition. These people may require special instruction from trained dietitians in consultation with their own physicians. The following dietary guidelines are recommended to maintain one's health and well-being:

- Eat a variety of foods.
- Maintain ideal weight.
- Avoid too much total fat, saturated fat, and cholesterol.
- Eat foods with adequate starch and fiber.
- Avoid too much sugar.
- Avoid too much sodium.
- Be moderate if you drink alcohol.

The guidelines help us make informed choices about our food. The object is to get the right balance of vitamins, minerals, and fiber without overdoing the salt or the calories, especially the calories from fat and sugar.

These guidelines are intended for people who are already healthy. No guidelines can guarantee a person's health or well-being. An individual's health depends on many things, including heredity, life-style, personality traits, mental health, and attitudes and environment, in addition to diet.

Food alone cannot make you healthy. But good eating habits based on moderation and variety can help keep you healthy and even improve your health.

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*Adapted from: *Nutrition and Your Health: Dietary Guidelines for Americans*. Home and Garden Bulletin No. 232. Washington, D.C.: U.S. Department of Agriculture and U.S. Department of Health and Human Services, 1980.

Eat a Variety of Foods

You can get the vitamins and minerals you need for good health with a variety of foods. Choosing a wide selection of fruits, vegetables, whole grain and enriched breads and cereals, dairy products, legumes, meat, fish, and poultry products will do the job.

Adding variety to our diets is not hard. Most of us vary the way we eat from day to day. It is a good idea nutritionally. If you pick different foods from within each group of foods, you increase the range of nutrients in your diet. Over a period of days, you should come out about right.

To increase the variety of foods:

- Provide more servings of fruits and vegetables.
- Frequently include dark green vegetables, citrus fruits, dry bean and pea dishes, and starchy vegetables.
- Serve more grain products, especially whole grains.

Maintain Ideal Weight

If you need to lose weight, do so gradually. Steady loss of one to two pounds a week until you reach your goal is a relatively safe approach and more likely to be maintained.

If you want to lose weight:

- Start by cutting back on fats and sugars.
- Cut back on serving sizes.
- Eat slowly and limit second helpings.
- Increase your physical activity.

Avoid Too Much Total Fat, Saturated Fat, and Cholesterol

Several factors have been linked to heart disease. Among them are high levels of blood cholesterol, high blood pressure, diabetes, a history of heart disease in the family, and obesity. Many scientists believe that certain habits and characteristics raise the risk of heart disease. These behaviors include smoking, reaction to stress, physical inactivity, and increased consumption of fats, saturated fat, cholesterol, and sodium.

There is debate about whether it is wise to make a general recommendation that people should reduce their dietary fat and cholesterol. Many scientists believe that it is sensible to consume only moderate amounts of fat, saturated fat, and cholesterol. They also believe that this moderation poses no known health risk and may reduce a person's risk of heart disease.

To lower the amount of fat, saturated fat, and cholesterol in your diet:

- Select lean hamburger and lean roasts, chops, and steaks trimmed of visible fat.
- Choose more fish and poultry.
- Drain meat drippings.
- Limit the amount of margarine or other fats used on bread and vegetables.
- Emphasize low-fat and skim milk and other low-fat dairy products, and reduce the amount of fat in other foods when whole milk or cheese is used.
- Cut down the amount of fat used in recipes added to foods in cooking or added at the table.
- Broil, bake, steam, or boil foods rather than frying them; especially limit breaded or batter-fried foods.
- Avoid excessive intake of egg yolks.
- Use fewer creamed foods and rich desserts.
- Watch the amount of salad dressing used.
- Experiment with meatless meals by using dried beans, peas, tofu, and other bean products.

Eat Foods with Adequate Amounts of Starch and Fiber

To have enough starch and fiber in your diet:

- Select more vegetables and fruits.
- Include potatoes, sweet potatoes, yams, corn, peas, and dried beans more often.
- Emphasize whole grain cereal products such as brown rice, oatmeal, and whole wheat cereals and breads.

When you make these changes, it may seem that you are eating more food than you are used to eating. Because you are cutting down on the concentrated calories from fats and sweets and adding more servings of fruits, vegetables, and whole grains, your diet is bulkier. There are more calories, but the volume is larger. Nutritionally, this increase is an advantage. You are getting more nutrients and fiber for your calories. Since the bulkier diet makes you feel full, it may help curb your appetite. Even so, this diet may take some getting used to.

People who count calories often will not touch starchy foods like potatoes, breads, and grains. They think starches are fattening. Actually, starches are no more fattening than any other food. The question is how much you eat and how much fat or sugar and other sweeteners you add to the starches. Fats have more than two times the calories of starch. Sugar has no more calories than starch, but sugary foods add little more than calories to your diet.

Avoid Too Much Sugar

We get most of our added sugar from soft drinks, candy, and desserts, not from the sugar bowl. To avoid excessive sugars:

- Use less of all sugars, including white sugar, brown sugar, raw sugar, honey, and syrups.
- Eat less of foods containing these sugars, such as candy, soft drinks, ice cream, cakes, cookies, jams, jellies, and syrup.
- Select fresh fruits or fruits canned without sugar or in light syrup or juice pack rather than heavy syrup.
- Reduce the amount of sugar in recipes for baked goods and desserts.
- Read food labels for clues on sugar content. If the names sucrose, glucose, maltose, dextrose, lactose, fructose, corn syrups, honey, or corn sweeteners appear first, then there is a large amount of sugar.
- Remember, how often you eat sugar is as important as how much sugar you eat.

Avoid Too Much Sodium and Salt

Sodium is a component of salt. Aside from the salt we add in cooking and at the table, much of the sodium we consume comes from the salt and other sodium compounds in commercially prepared foods. So choose carefully when you are eating out. When you shop, read the label. Avoid obviously salty foods. Keep the salt shaker off the table. Your appetite for salty foods may be curbed if you make an effort to break the salt habit.

To limit the amount of sodium and salt:

- Learn to enjoy the unsalted flavors of foods.
- Cook with only small amounts of added salt.
- Add little or no salt to food at the table.
- Limit the use of salty processed foods such as luncheon meats and frankfurters.
- Avoid excessive use of commercially prepared soups, sauces, and condiments which contain sodium. These include soy sauce, pickles, relishes, bouillon cubes, meat tenderizer, monosodium glutamate, gravy mixes, canned soups, and seasoned salts such as garlic salt or celery salt.
- Use more fresh and frozen vegetables than canned or seasoned frozen vegetables which have salt added.
- Limit the use of salty snack foods such as chips, pretzels, and crackers.

Appendix F

Food Group Guide

Food Group	Nutrient Provided	Foods Included	Amounts Recommended
Milk and Cheese	Protein, calcium, riboflavin and, if fortified, vitamins A and D	Milk: fluid whole, evaporated, skim, dry, buttermilk Cheese: cottage, cream, cheddar-type, natural or process Ice cream, ice milk Yogurt	Some milk every day for everyone is recommended. Below are recommended amounts of 8-ounce (240 mL) cups of fluid milk: Children under nine: 2 to 3 (480 mL to 72 mL). Children nine to twelve: 3 or more (720 mL or more) Teenagers: 4 or more (960 mL or more) Adults: 2 or more (480 mL or more) Pregnant women: 3 or more (720 mL or more) Nursing mothers: 4 or more (960 mL or more) Part or all of the milk may be fluid skim milk, buttermilk, evaporated milk, or dry milk. Cheese, ice cream, and yogurt may replace part of the milk. One-inch (2.54 cm) cube cheddar-type cheese is equal to ⅓ cup (1[illegible] mL) milk. ½ cup (114 g) cottage cheese is equal to ⅓ cup (80 mL) milk. 2 tablespoons cream cheese is equal to 1 tablespoon (15 mL) milk. ½ cup (65 g) ice cream or ice milk is equal to ⅓ cup (80 mL) milk. 1 cup (240 mL) yogurt is equal to 1 cup (240 mL) milk.
Meat, Poultry, Fish, and Beans	Protein, iron, and the B vitamins	Beef, veal, lamb, pork, variety meats, such as liver, heart, kidney Poultry and eggs Fish and shellfish As alternates—dry beans, dry peas, lentils, nuts, peanuts, peanut butter	Two or more servings Count as a serving: 2 to 3 ounces (56 g to 84 g) (not including bone weight) cooked lean meat, poultry, or fish. Count as alternates for ½ serving meat or fish: 1 egg, ½ cup (90 g) cooked dry beans, dry peas, or lentils, or 2 tablespoons (32 g) peanut butter.

Food Group	Nutrient Provided	Foods Included	Amounts Recommended
Fruit/Vegetable	Vitamins A and C	All vegetables and fruits Sources of vitamin C: Grapefruit or grapefruit juice, orange or orange juice, cantaloupe, guava, mango, papaya, raw strawberries, broccoli, brussels sprouts, green pepper, sweet red pepper Sources of vitamin A: Dark green and deep yellow vegetables and a few fruits; examples are apricots, broccoli, cantaloupe, carrots, chard, collards, cress, kale, mango, persimmon, pumpkin, spinach, sweet potatoes, turnip greens, and other dark green leafy vegetables, winter squash.	Four or more servings, including: One serving every day of a good source of vitamin C One serving at least every other day of a good source of vitamin A
Bread and Cereal	Carbohydrates, protein, iron, and B vitamins	All breads and cereals that are whole grain, enriched, or restored; check labels to be sure. Specifically, this group includes breads, cooked cereals, ready-to-eat cereals, cornmeal, crackers, flour, grits, macaroni and spaghetti, noodles, rice, rolled oats, quick breads, and other baked goods if made with whole grain or enriched flour. Bulgur and parboiled rice and wheat also are included in this group.	Four or more servings Count as one serving: 1 slice of bread; 1 ounce (28 g) ready-to-eat cereal; ½ to ¾ cup (80 g—120 g) cooked cereal, cornmeal, grits, macaroni, noodles, rice, or spaghetti.

What About Fats and Sweets?

In general the amount of these foods to use depends on the number of calories you require. It is a good idea to concentrate first on the calorie-plus-nutrients foods included in the Four Food Groups previously listed as the basis of your daily diet. Foods containing mainly fats and sweets are called empty caloric foods because they are usually high in calories but low in vitamins, minerals, or protein. This group includes candy, sugar, jams, jellies, syrups, sweet toppings, and other sweets, soft drinks, and other highly sugared beverages. Also included are pastries and unenriched flour products. An ounce of fat has more than twice the number of calories as protein, starches, or sugars. Fats include butter, margarine, mayonnaise, some gravies, and salad dressings.

Appendix G

You and Nutrients

More than 50 different kinds of nutrients exist. All of them are important in helping your body grow, repair cells, and generally stay healthy. Luckily, you do not have to try to remember the names of these nutrients, because nutrition experts have put all nutrients into *six basic groups:* carbohydrates, proteins, fats, vitamins, minerals, and water. A closer look at the six groups of nutrients will show you how all of them work to keep you going.

Carbohydrates: Essential for Energy

What kind of food do you think of when you hear the word *carbohydrate?* If you are like most people, you probably think of corn on the cob, baked potatoes, spaghetti, or breads. And you are right. But what about celery or a peach or table sugar? Did you know that these foods are also made of carbohydrates?

There are three different kinds of carbohydrates:

- Sugars are called simple carbohydrates. They are found naturally in foods like fruit and milk and in some vegetables like beets and peas. Refined sugars from sugar cane and sugar beets are added to foods like candy, soda, cakes, and ice cream.
- Starches, which are one type of the complex carbohydrates, are found in foods like bread, potatoes, rice, and vegetables.
- Fiber, which is also a complex carbohydrate, is found in the walls of plant cells, the tough structural parts of plants. Examples are the stringy part of celery or the bran of wheat and other cereals. Although humans cannot digest fiber, it plays an important role in keeping them healthy. It helps move foods through the body and helps the body get rid of wastes left over from digestion.

Of the three kinds of carbohydrates, starches have been the main part of people's diets from early human history until the present. In Asia, for example, rice is the main part of every meal.

Carbohydrates are your main source of energy. The starches and sugars you eat are changed to *glucose.* Just as gasoline provides fuel for your car, glucose provides fuel for your cells. This fuel burns in the cell, producing energy and heat. That's one reason why your body temperature is normally 98.6° Fahrenheit (37° C). The cells use energy to repair themselves, make new cells, and carry out their work.

Whenever you eat more carbohydrates than your body needs, two things happen: the first is that a little of the extra glucose is changed into another substance called *glycogen.* Your body stores the glycogen for times when you need extra energy, such as when you race your brother to the corner grocery store. When you need extra energy, your body changes the glycogen back into glucose, which is sent to the cells to be used for energy. (You have only about one pound of glycogen in storage at any one time.) The second thing that happens is that most of the extra glucose from the food you eat is changed into fat, which your body stores almost everywhere. When you really need fat, the body can change it back into energy. Most of us get enough food energy, and having a lot of extra fat is not too healthful

Protein: Your Body's Building Blocks

Nearly everything in your body is made up of *protein,* including your hair, bones, muscles, teeth, and even your brain. The protein you eat is broken down and built up into all these parts of your body. You need protein to build cells and to repair them. As much as 3 to 5 percent of the protein in your body is replaced each day. For example, red blood cells live only for about 120 days, and the cells in the lining of your small intestine get worn out in a few days and have to be replaced.

There are certain times of life when you need extra protein; for example, when you are growing or when you are recovering from injury. When you get older and when your growth slows, you will need less protein.

What foods have protein? Most people think first of meat, fish, and chicken. But milk, nuts, cheese, peanut butter, eggs, beans, and grains also have protein.

Completing the Protein Picture. Proteins are not all alike. They vary in the number of building blocks your cells can use. Therefore, you should eat a variety of protein foods to keep your cells growing and working right.

Most people in the world get their proteins from two or more sources. Mexican people, for example, eat beans and corn meal tortillas; Chinese people eat soybean cakes and rice; Arabic people eat chick peas and cracked wheat. You eat cereal and milk, for example, or macaroni and cheese. These foods not only taste good, but they work together for you in your body.

Building Muscles. Your muscles are made of protein. But you will not build stronger or bigger muscles just by eating foods higher in protein. In fact, if you eat a lot of extra protein without exercising, the protein will be turned into fat. Exercise and food together build muscles.

Fat: Your Body's Most Compact Source of Energy

Fat is the most compact source of energy. One way we measure energy is by the number of calories. An ounce (28 g) of fat, for instance, has more than twice the number of calories as an ounce of either protein or carbohydrate.

Fat does more than provide calories. It carries four important vitamins, called fat-soluble vitamins, throughout your body. (You will read more about these vitamins later.) Fat also protects your body's organs by providing padding.

But many scientists think that Americans eat too much fat. This practice can cause health problems.

First, fat is fattening. If you eat a lot of fatty foods like potato chips, french fries, fatty meats, frosted cakes, and butter or margarine, you may be getting more calories than you need for energy. As a result, you become fat.

Second, scientists think that eating too much fat over a lifetime is linked to some serious diseases that you may get as you grow older, such as heart disease, strokes, and some kinds of cancer. Maybe you know someone who has these illnesses.

Fat is found in such foods as whole milk, cream, cheese, nuts and seeds, and meats. Fat is also found in vegetable oils, butter, margarine, mayonnaise, bacon, avocados, and olives. Fat is often added to foods; for example, during the preparation of cakes, fried foods, cookies, some candies, frosting, gravies, sauces, and salad dressings.

Vitamins: Necessary for Good Health

Vitamins are important chemicals. They do not provide energy, but they are needed in the right amounts for the cells to do their work.

Some vitamins help to make blood cells, hormones, and the regulating substances that are needed all the time. Other vitamins help the body to use other nutrients. Most people who eat a variety of food get all the vitamins they need from what they eat.

There are about 13 vitamins that are absolutely necessary for good health. Four are called fat-soluble vitamins because they dissolve in fat. These are vitamins A, D, E, and K. They are digested and absorbed with the help of fats from the diet. These vitamins can be stored in the body for long periods of time, mostly in fatty tissue and in the liver.

The nine other vitamins are called water-soluble vitamins. They include eight B vitamins and vitamin C. These vitamins are not stored in your body very long; therefore, you need to eat foods that are good sources of these vitamins every day.

A closer look at vitamins will show why they are needed and where you get them:

- Vitamin A. This vitamin is needed for good vision, healthy skin, strong bones, and wound healing. It is found in yellow, orange, and green vegetables, in yellow fruits, and in the fat of animal products like fish, milk, eggs, and liver.
- B vitamins. These vitamins are needed to release the energy in food; to maintain healthy eyes, skin, and mouth; and to keep the nervous and digestive systems working properly. They are found in many foods such as whole grain and enriched cereals and breads, meats, and beans.
- Vitamin C. This vitamin is needed for healing wounds; for the development of blood vessels, bones, teeth, and other tissues; and for minerals to be used by the body. It is found in food like citrus fruits, melons, berries, leafy green vegetables, broccoli, cabbage, and spinach.
- Vitamin D. This vitamin is needed for using calcium and phosphorus to build strong bones and teeth. When exposed to sunlight, the skin produces this vitamin. It is found in fatty fish, liver, eggs, and butter, and it is added to most milk.
- Vitamin E. This vitamin helps preserve the cell tissues. It is found in a wide variety of foods, and most people get enough. Vegetable oils and whole grain cereals are especially rich sources.
- Vitamin K. This vitamin is needed for normal blood clotting. It is found in dark green leafy vegetables, peas, cauliflower, and whole grains. It is also made in our bodies.

Minerals: Essential for Teeth, Bones, and Health

Minerals are essential to your health, even though you need only small amounts of each kind. The essential minerals can be divided into four groups:

- Minerals which are part of the bones are calcium, phosphorus, magnesium, and fluorine.
- Minerals that regulate body fluids are sodium, potassium, and chlorine.
- Minerals that are necessary to make special materials the cells need to do their work are iron and iodine.
- Minerals that are needed in tiny amounts are called trace elements. They trigger chemical reactions in the body that are essential for good health.

Information about what these minerals do and where they may be found is presented as follows:

Minerals That Strengthen Bones. Minerals essential for strong bones are calcium, magnesium, phosphorus, and fluorine.

- Calcium is the mineral we need the most. It makes bones and teeth strong and sturdy and is found in milk products.

- Phosphorus works with calcium in making bones and teeth. Phosphorus is very plentiful in a typical American diet. Phosphorus is found in meats, fish, poultry, eggs, cheese, milk, legumes, and whole grains.
- Magnesium helps bones and muscles do their work and helps turn food into energy. It also helps the body use certain vitamins. This mineral is found in nuts, seeds, dark green vegetables, and whole grain products
- Fluorine, which is also important for strong bones and teeth, helps prevent cavities. It is found in seafood and in some plants. Many of us get our supply from the fluorine added to drinking water.

Minerals That Regulate Fluids. These minerals include sodium, potassium, and chlorine. More than half of your body is water. These minerals help keep the right amounts of water inside the cells—while keeping the rest out. Most of the sodium and chlorine in the diet is added to foods like table salt. Potassium is found in many foods. Good sources include foods such as oranges, bananas, cantaloupe, dark green leafy vegetables, and meats.

Minerals That Make Materials. Minerals that make materials include iron and iodine. Iron carries oxygen in your blood. The best sources of iron are meats (especially liver). But foods from some plants—like beans, green leafy vegetables, and grains—are good sources of iron, especially when eaten along with foods rich in vitamin C. An example is drinking some orange juice with your whole wheat toast in the morning. The vitamin C helps your body absorb iron better.

Iodine is needed to make a hormone produced by the thyroid gland, which controls growth. Many years ago people worried about getting a disease called goiter because they did not get enough iodine. Because iodine is now added to salt, people are less concerned about getting this disease.

Trace Elements. Trace elements are minerals that are needed in very small amounts. There are many trace elements. Zinc and copper are two examples. Zinc helps you grow, taste, and make proteins, and it helps wounds to heal. Zinc is found in whole grain bread and cereals, beans, meats, shellfish, eggs, and in many more foods. The second example, copper, along with iron, is important for healthy red blood cells. It also helps build muscles. Good sources are fish and meats, as well as nuts, raisins, oils, and grains.

Water: Essential for Life

You probably did not realize that *water* is a nutrient. It is the most important nutrient of all. You can survive for weeks without a single bite of food, but you can live for only a few days without water.

Your body is more than half water. Your blood, for instance, is 90 percent water, and your brain is 75 percent water. *Every* one of your cells contains water. It carries nutrients to your cells and carries wastes away. It keeps your body at just the right temperature.

You lose about 2½ quarts (2.4 litres) of water a day. Some is lost as urine, some as perspiration, some when you breathe. (Did you ever notice the moisture on your glasses when you blew on them to clean them?)

But water is usually easy to replace. Water comes as a by-product of the cell's work inside your body. Water also comes in all the foods you eat.

Can you think of foods that contain a lot of water? You probably guessed tomatoes, oranges, and watermelon. But do you know that bread is more than one-third water and that meat is more than half water? And, of course, milk and juice are nearly all water (plus nutrients and natural flavorings).

Conclusion

You now should know more about the nutrients you need: carbohydrates, protein, fats, vitamins, minerals, and water. They come from the food you eat, and they make you what you are.

Appendix H

Youth Advisory Council

What Is a YAC?

A youth advisory council (YAC) is an organization composed of students who have an interest in learning about the school food service program, health, and nutrition.

The youth advisory douncil was started by the American School Food Service Association to encourage student involvement in the school lunch program. The U.S. Department of Agriculture supports the establishment of youth advisory councils for meeting the new regulation that mandates the involvement of students in the school food service program.

Youth advisory councils are an excellent means for discovering student reactions to the food served in the cafeteria as well as their ideas and opinions on school food service. After all, students are the customers who support the school meal program.

Steps to Start a YAC

This section contains information about the steps to be followed for organizing a YAC and then for continuing its activities.

Create an Organization

1. First, inform the following groups about the YAC program, using the organizational packet:
   a. All cafeteria managers
   b. All principals
2. Then the cafeteria manager at each school should organize a meeting to include the school principal or vice-principal, the director of activities, interested teachers, school nurse, school food service representative, and any interested students. The following points should be covered at this meeting:
   a. Discuss whether or not the cafeteria manager has the time to act as the major YAC adult leader. If he or she is unable to find time to meet with YAC students regularly, ask for support from a teacher or other staff members who can be responsible for keeping the YAC active.
   b. Have the group discuss the best method for recruiting interested students for the youth advisory council.

   One suggested method for reaching the student body is to include announcements in the daily school bulletin and in assembly announcements. Suggested announcements may include the following:

   How many of you eat school lunch? How would you like to become involved in the cafeteria's policies and the food served? If you are interested, come to the first youth advisory council (YAC) meeting on (date), in room (number) at (time), or sign up with the activities director or cafeteria manager as soon as possible.

   What is a YAC? YACs, or youth advisory councils, are made up of students who are interested in health, nutrition, and food service. They have something to say about the school lunch and the cafeteria, and they promote good nutrition in their school. Learn more about YACs today in room (number) at (time).

   After a satisfactory number of students (five to 15) have been recruited, the cafeteria manager or adult leader should arrange the first YAC meeting.

   Include all interested students, faculty, and school food service administrative personnel.

Plan Meetings

1. First meeting—Provide information.
   a. Inform the students about the YACs, using materials from American School Food Service Association (ASFSA) and the Florida Department of Citrus (see page H-4 for resource materials).
   b. Obtain a list of students' names and telephone numbers. This procedure should be continued at each meeting thereafter.

   c. Establish regular meeting times. Suggested times include: (1) early in the morning before school; (2) during the student government period; (3) immediately after lunch; and (4) after school.

2. Second meeting—Organize the students.
   a. Discuss the constitution. (See below.)
   b. Elect officers.
   c. Discuss methods for administering the survey to the student body in preparation for the third meeting in which the council will identify its concerns.
3. Third meeting—Develop a survey.
   Develop and administer a survey (see sample on page H-3) to help identify concerns of the student body on food service and nutrition.
4. Fourth meeting—Identify concerns.
   Tabulate the results of the survey and establish target areas of need based on the results of the survey.
5. Fifth meeting—Plan for action.
   Plan for activities to meet the target areas.

Act on Plans Made

It may be helpful to establish a time line for activities to help ensure that your activity goals are met.

Evaluate Progress

Near the end of the year, the council should design a progress evaluation based on the sample on pages H-5 and H-6. Each council's evaluation should evaluate only the areas of concern that it has chosen to act on.

Food Services Youth Advisory Council Constitution Guidelines

ARTICLE I. Name and purpose

1. This organization shall be known as the (school name) Youth Advisory Council (referred to as YAC in the remainder of these guidelines).
2. The purpose of this organization is as follows:
   a. To serve as a communications bridge between students, school food service programs, school faculty, administrators, and the community
   b. To familiarize the student body with the National School Lunch Program
   c. To improve all aspects of the school breakfast and lunch programs
   d. To develop a way to make fellow students aware of the importance that good nutritional habits can play in one's life
   e. To advance the ideals of YACs through the school district, state, and nation

ARTICLE II. Membership

This organization will be composed of all students at (school name) who have a common interest in the school food service program.

ARTICLE III. Officers

1. The officers of the YAC shall be chairperson, cochairperson, secretary, and/or treasurer.
2. There will also be a representative to the district youth advisory council.

ARTICLE IV. Duties of Officers and Members

1. The chairperson/cochairperson shall organize and preside at all YAC meetings.
2. The secretary/treasurer shall keep a record of all activities at the council meetings.
3. Other officers and members shall peform duties as established by each school YAC, according to individual council needs.
4. The representative to the student body government shall represent the YAC in the student government meetings and present any pertinent YAC business to the student government.
5. The representative to the district YAC shall represent the school YAC at the district youth advisory council meetings.

ARTICLE V. Meetings

Meetings will be held on a regular basis, as determined by the school YAC.

ARTICLE VI. Sponsor

An adult sponsor shall act as an adviser to the YAC.

ARTICLE VII. Guidelines and Amendments

1. Guidelines for the school YAC shall be drawn up according to the needs of the individual council.
2. Amendments to the YAC constitution shall be made according to the needs of the individual school and approved by the students, faculty adviser, and the school food service manager.

ARTICLE VIII. Source of Authority

All powers of the YAC are delegated to it by those directly concerned with the management of school food services. Therefore, all proposals will be subject to approval by the food service director.

Youth Advisory Council Activities

Cafeteria Environment

1. Work with the art department to design and prepare colorful bulletin boards or displays on the cafeteria walls.
2. Work with the school administration to obtain colorful tables and chairs.
3. Organize interesting, informative noon assemblies in the cafeteria.
4. Develop and display posters on decreasing noise and litter in the cafeteria.
5. Brainstorm with the cafeteria manager on more efficient or comfortable ways to arrange the cafeteria.
6. Develop a clean table award.
7. Visit other schools for ideas.

Meal Service

1. Brainstorm on ideas for speeding up the lunch line.
2. Work with the food service department to select colorful serving dishes and utensils.
3. Promote days using special themes and menus; for example, Italian Day, Athletes' Day, Seniors' Day, Energy Saving Day, and Low-Cal Day.

Survey of Youth Advisory Council Activities

School: ______________________ Boy: ____ Girl: _____ Date: ____________________

Grade: ______________________

The purpose of this survey is to assist the youth advisory council (YAC) at the school in identifying student ideas and concerns about school food service and nutrition.

	Yes	No
Cafeteria Environment		
1. Is it too noisy in the cafeteria?	____	____
2. Do you enjoy the atmosphere of the cafeteria?	____	____
3. Do you like the organization of the cafeteria?	____	____
4. Are the tables and chairs comfortable?	____	____
Meal Service		
1. Is the service of meals fast enough?	____	____
2. Do you have enough time to eat?	____	____
3. Are the meals served attractively?	____	____
4. Are the cashiers and other food service workers pleasant?	____	____
5. Are eating utensils easy to use?	____	____
Cafeteria Food		
1. Does the cafeteria food appeal to you?	____	____
2. Do you like the taste of cafeteria meals?	____	____
3. Are the hot foods hot enough?	____	____
4. Are the cold foods cold enough?	____	____
Nutritional Needs		
1. Are you concerned about your health and nutrition when you select foods?	____	____
2. Do you feel you have adequate nutritional knowledge?	____	____
3. Do you eat breakfast before coming to school?	____	____
4. Would you eat the breakfast offered at school?	____	____
5. Do you feel that the school lunch is nutritious?	____	____
6. Do you eat the school lunch regularly?	____	____
Food Service Administration		
1. Do you feel that the cost of cafeteria food is fair in relation to the amount of food you get?	____	____
2. Do you feel that the menus have enough variety?	____	____

Comments are welcome: ____

____

____

Youth Advisory Council Resource List

Medium	Resource	Source	Cost
Slide script presentation	1. YAC Slide Show: How a high school in Florida organized a Youth Advisory Council	Florida Department of Citrus Virginia "Ginny" Lindstrom Nutrition Consultant 2128-B Galveston Avenue San Jose, CA 95122 (408) 292-2054	Free on loan
Filmstrip/cassette	1. Exeter Story: In-service training materials for adults, and 4 filmstrips/cassettes	Nutrition Know-How 48075 Colony Farm Circle Plymouth, MI 48170 (313) 455-0530	$89/each set
	2. Lunchroom Learning: Adult in-service training focusing on student activities with school food service, and 4 filmstrips/cassettes	Same as above	Same as above
Informational packet	1. ASFSA Starter Folder	American School Food Service Association 4101 East Iliff Avenue Denver, CO 80222 (303) 757-8555 (800) 525-8575	First folder free; additional copies $1
	2. The YAC "How to" kit of materials	Florida Department of Citrus Virginia "Ginny" Lindstrom Nutrition Consultant 2128-B Galveston Avenue San Jose, CA 95122 (408) 292-2054	Free
Activity packet	1. Florida O.J. Carnival 2. Florida O.J. Nutrition Fair 3. Florida O.J. Sports Spectacular	Florida Department of Citrus Virginia "Ginny" Lindstrom Nutrition Consultant 2128-B Galveston Avenue San Jose, CA 95122 (408) 292-2054	Free
Brochures	1. "Get on the Right Track with YAC," San Juan Unified School District	American School Food Service Association 4101 East Iliff Avenue Denver, CO 80222 (303) 757-8555 (800) 525-8575	Free

Cafeteria Food

1. Promote menu items that are available but that the students may not know about, such as fruit, yogurt, and special salads.
2. Have an advisory group work with the person who plans menus.
3. Conduct taste tests on new menu items.
4. Work with the cafeteria and food services to offer low-caloric entrees.
5. Visit other schools for ideas.

Nutritional Needs

1. Display nutrition posters around the school.
2. Inform the student body of the benefits of school lunch through an assembly using a filmstrip or skit.
3. Post the caloric content for each menu item offered.
4. Work with the cafeteria and food services to offer low-caloric entrees.
5. Invite special speakers that are qualified nutritionists to speak to the student body.
6. Organize a school or districtwide nutrition fair.

Food Service Administration

1. Have district office staff discuss the cost of the school lunch and factors that are considered when determining cost.
2. Using members of YAC, form an advisory committee to discuss ideas and suggestions made by YACs with the food service department.
3. Have the nutritionist or food service director discuss how menus are planned, using surplus commodities to promote an understanding of why some items are included on the menu.
4. Set up informational bulletin boards on youth advisory councils.
5. Work with the local or state chapter of the California School Food Service Association (CSFSA) to assist in planning a regional or statewide conference.
6. Promote school lunch, having members of the YAC attend the school's PTA meeting and discuss benefits of school lunch.

YAC Fund-Raising

The youth advisory council may sponsor fund-raisers such as the following:

1. Refreshment concessions at athletic events and special functions
2. Car washes
3. Spaghetti feeds
4. Pizza sale (take orders, make pizza, deliver to door)
5. Submarine sandwich sale (Take orders, make sandwiches, deliver to customer.)

The following groups may be able to offer financial assistance to the YAC:

1. Student council or student government
2. Local CSFSA chapter
3. Local school district food service department

YAC Progress Evaluation

School: ______________________ Boy: ____ Girl: ______ Date: ______________________

Grade: ______________________

The purpose of this evaluation is to assist the youth advisory council (YAC) in identifying the council's effect on the school food service program and the student body's nutritional concerns.

	Yes	No
1. Do you feel that the cafeteria environment has improved over the past school year?	_____	_____
2. Do you feel that the meal service has improved in the past school year?	_____	_____
3. Do you feel that food offered in the cafeteria has improved over the past school year?	_____	_____
4. Do you feel that you have a better understanding of nutrition and how it relates to the school lunch and breakfast programs?	_____	_____
5. Do you feel that you are more aware of how the school lunch program operates?	_____	_____

Additional comments are welcome: ____

____

Miscellaneous media, such as nutrition posters, brochures, and other information, are available from the following sources:

1. California School Food Service Association SAC/YAC Chairperson, P.O. Box 74188, Los Angeles, CA 90064, (213) 463-0252
2. USDA Food and Nutrition Service, 550 Kearny Street, San Francisco, CA 94108, (415) 556-4951
3. The local home economist, University of California Cooperative Extension
4. Industry—Project SMILE (School Meals for Learning and Education), Nancy Thomas, Vice-President, Creative Stuff-Public Relations, 5142 Warner Avenue, Suite 201, Huntington Beach, CA 92649, (714) 840-1341
5. Center for Science in the Public Interest, 1757 S. Street N.W., Washington, DC 20009

School Lunch Survey Sample

1. How often do you eat a school-prepared lunch?
   ☐ Never ☐ 1 to 2 times per week ☐ 3 to 4 times per week ☐ Every day
2. How would you rate the quality of the food served in the cafeteria; that is, does it taste good; does it look good?
   ☐ Needs improvement ☐ Fair ☐ Great
3. Do you feel that there is enough variety in the foods offered in the cafeteria?
   ☐ Yes ☐ No
   Suggestions for a new food: ____________________
4. Do you feel that the lunchroom is a pleasant place in which to eat?
   ☐ Yes ☐ No ☐ Sometimes
5. Check the following for suggestions for improving the lunch area:
   ☐ Cafeteria cleanliness patrol ☐ Cheer up the cafeteria manager
   ☐ Colorful murals or paintings ☐ Other: ____________________
6. Would you be interested in being a member of an advisory council to school food service?
   ☐ Yes ☐ No
   Grade level: ____________ Name: ____________________

Appendix I

Senior High Multidisciplinary Nutrition Lessons

Nutrition education is related to many other disciplines, such as art, English, social studies, science, physical education, and math. Activities which include nutrition information, knowledge, or skills can be easily integrated into an existing curriculum. These activities become the means by which subject area skills can be developed. The *Choose Well, Be Well Curriculum Guide for High School Students* provides not only a complete nutrition curriculum but also includes various nutrition related activities to be used in the disciplines listed above. These supplementary activities do not require mastery of the nutrition minimum proficiencies or an in-depth study of nutrition, but they serve to supplement and support the *Choose Well, Be Well* curriculum.

The following describes these activities by subject, skill to be mastered, and location in the curriculum guide.

Subject	Skill	Lesson and page number
Art	Merchandising and advertising	L. 18, pages 66—71
	Presentation and commercial art principles	L. 19, page 75
	Design or commercial art principles	L. 21, page 84
	Design and function	L. 27, page 99
Biology	Microbiology	L. 27, page 99
English	Research, report writing, and compositon	L. 12, page 50
	Spelling and vocabulary words	L. 19, page 75
Math	Percents and decimals	L. 2, page 13, J-19
	Graph and chart reading	L. 2, page 13
	Unit pricing	L. 21, page 83
Physical Education	Nutrition knowledge related to PE	L. 16, page 63
Social Sciences	World food problems	L. 12, page 45
	Economics and inflation	L. 21, page 84
	Industrial revolution or modern society	L. 28, page 104

Appendix J

Student Materials

Name ______________________

Nutrition Know-How

The following are true or false statements. Write the word true by those statements you believe to be true and the word false by those statements you believe are false.

________ 1. Vitamin C cures colds.

________ 2. Everyone should take vitamins just to be sure.

________ 3. Toasted bread has fewer calories than untoasted bread.

________ 4. The body does not need carbohydrates.

________ 5. The earth's soil has lost its vitamins and minerals; thus, our food crops have little nutritional value.

________ 6. Alcoholic beverages do not have calories.

________ 7. You must give up snacks to lose weight.

________ 8. Exercise makes you eat too much.

________ 9. Whole milk is more nutritious than skim milk.

________ 10. You need to eat meat every day.

________ 11. Two types of calories are the fast-burning calorie and the slow-burning calorie.

________ 12. A weight loss of ten pounds per week is not harmful.

________ 13. Breads and cereals should not be eaten because they are high in carbohydrates.

________ 14. Fewer calories are found in protein than in carbohydrates.

________ 15. Eating lots of protein helps the hair grow faster.

________ 16. Vitamins from natural sources are much better than synthetic vitamins.

________ 17. Reducing the calorie intake to 500 calories a day is all right.

________ 18. You should not eat bread and potatoes if you are on a diet.

________ 19. High protein diets will double your athletic performance.

________ 20. Brown-shelled eggs are more nutritious than white-shelled eggs.

________ 21. Water is fattening.

________ 22. For some people "everything turns to fat."

________ 23. Honey is less fattening than white sugar.

________ 24. Raw sugar is more nutritious than refined sugar.

Nutrition Know-How Answer Key

1. **False.** There is no cure for colds; they simply run their course. Some recent research indicates that vitamin C may decrease the severity of cold symptoms or shorten the duration of the cold, but it does not cure a cold.
2. **False.** Most healthy individuals whose diets are well-balanced do not need to include dietary supplements.
3. **False.** Toasting does not remove calories.
4. **False.** The body needs carbohydrates as well as many other nutrients. The body uses carbohydrates for energy.
5. **False.** Fertilizers that are added to the soil provide enough nutrients so that the food crops have the expected nutritional value. If the soil was depleted in nutrients, plants would not grow at all.
6. **False.** Alcohol has seven calories per gram.
7. **False.** You need to reduce calories in order to lose weight, but you can do so in many ways. Low calorie snacks, such as vegetable sticks, fresh fruit, and unbuttered, unsalted popcorn may actually aid in weight loss as they provide bulk but few calories.
8. **False.** Exercise will not make you overeat. Regular exercise actually helps control your appetite. It also helps tone muscles, improve circulation, and strengthen the heart.
9. **False.** Skim milk, if fortified with vitamins A and D, contains all the nutrients of whole milk but contains less fat.
10. **False.** You do not need meat in your diet every day. Though it is a good source of many nutrients, there are many other foods that provide the same nutrients.
11. **False.** All calories are the same.
12. **False.** The loss of ten pounds in one week would be dangerous to your health. The body would not be getting enough nutrients or calories to function properly.
13. **False.** The body needs carbohydrates for energy, and breads and cereals are high in complex carbohydrates, as well as other nutrients, for about 60—150 calories per serving.
14. **False.** Protein and carbohydrates each contain four calories per gram.
15. **False.** Hair, fingernails, and muscles will grow at a certain rate if the body is supplied with enough protein. Extra protein is not necessary.
16. **False.** Vitamins are specific chemical compounds. The human body can use either the natural or the synthetic vitamin.
17. **False.** Your body will not receive all the nutrients it needs if you consume only 500 calories a day.
18. **False.** You may eat bread and potatoes on a diet, but you will probably want to skip butter, jelly, jam, sour cream, and bacon.
19. **False.** High protein diets are often high in fat, which is not beneficial to athletic performance. Excess protein is converted to fat in the body, not to muscle production.
20. **False.** Their nutritional value is the same.
21. **False.** Water contains no calories and, therefore, is not fattening.
22. **False.** Some people gain more weight than others who eat exactly the same food because they are less active.
23. **False.** All sugars contain calories. Honey has 65 calories per tablespoon, and white sugar has 40 calories per tablespoon.
24. **False.** Both raw and refined sugars are reduced to a simple sugar (glucose) in the body. The contribution of trace nutrients present in raw sugars is negligible.

Name ______________________

What's Your Advice?

1. Your friend Susan is planning to go on a diet of six bananas and one quart of skim milk every day for one week. What advice would you give her? Why?

2. Mike has a cold, so he is taking three 500 mg vitamin C tablets a day. He claims that this dosage of vitamin C will cure his cold immediately. How would you respond? Why?

3. Karen, who is trying to lose weight, puts two spoonfuls of honey into her tea. She says she has switched from white sugar to honey because honey has fewer calories and more nutrients than sugar. What would you say to her? Why?

4. Jeremy, who is trying to lose weight, has eliminated carbohydrates from his diet. What advice would you give him? Why?

Name ______________________

Pregame Diet

(Should be eaten three to four hours before competition)

Recommended item	Serving size	My diet	Serving size
Roasted or broiled meat or poultry	3 oz (84 g)		
Mashed or baked potato or rice or macaroni	1/2 cup		
Vegetables	3/4-1 cup		
Skim milk	1 cup (240 mL)		
Butter or margarine	1 tsp (6 mg)		
Jelly or other sweet	2 tsp (10 mg)		
Fruit or juice	1 serving		
Sugar or plain cookie	2		
Extra beverage	1-2 cups (240-480 mL)		

Other hints:

1. Omit coffee, tea, and alcohol.
2. Fluid and electrolyte losses during heavy sweating need to be replaced by drinking water or juices.
3. For continued high work output, salt will be needed. Use a salt based drink, or eat a salted snack with water. (Salt tablets are not necessary.)

Name ______________________

Be a Nutrition Expert

Tell why the following statements are false:

1. A diet of 500 calories per day is healthy.

2. There are different kinds of calories.

3. Water is fattening.

4. Vitamin C cures colds.

5. You need to eat meat every day.

6. Vitamins from natural sources are much better than synthetic vitamins.

RDA Information

1. The RDA (Recommended Dietary Allowances) are the amounts of essential nutrients believed to be adequate to meet the known nutrition needs of most healthy persons.
2. The RDA is determined by a committee of the Food and Nutrition Board of the National Academy of Sciences. Recommended Dietary Allowances are periodically revised as new research provides better data on nutrient needs. The most recent revision of the RDA was published in 1980 (tables 1, 2, and 3).
3. To determine the average nutrient requirements of a healthy population, scientists study human subjects, experimental animals, and dietary survey information from humans in the population.
4. Nutrient needs of individuals vary with age, sex, body size, physiological state, and genetic makeup.
5. The recommendations are standards for *groups* of the American population; therefore, caution should be assumed when applying them to individual needs.
6. The amounts are figured *high* enough to cover the needs of 97.5 percent of the population.
7. The RDA are recommendations for the amount of nutrients that should be consumed daily, not for the nutrient content of specific foods.
8. The RDA are *not* minimum daily requirements. They are estimated to exceed the requirements of most individuals and thereby ensure that the needs of nearly all are met.
9. The RDA apply only to healthy people. Sickness may greatly increase a person's needs for certain nutrients.
10. The RDA can be used to determine the relative nutritional quality of foods.
11. A variation of the RDA is the U.S. Recommended Daily Allowances (U.S. RDA) that appear on food labels. To ensure a U.S. RDA high enough for almost everyone, the RDA for the sex-age category with the highest allowance was selected for most nutrients. The U.S. RDA, therefore, is not meant to be used to determine whether or not a person is getting enough nutrients from foods. Instead, these standards are intended as an aid for comparing the relative nutritional values of different food products.

Table 1

Food and Nutrition Board, National Academy of Sciences-National Research Council
RECOMMENDED DAILY DIETARY ALLOWANCES[1], Revised 1980
Designed for the maintenance of good nutrition of practically all healthy people in the U.S.A.

	Age (years)	Weight (kg)	Weight (lbs)	Height (cm)	Height (in)	Protein (g)	Fat-soluble vitamins			Water-soluble vitamins							Minerals					
							Vitamin A (μg R.E.)[2]	Vitamin D (μg)[3]	Vitamin E (mg α T.E.)[4]	Vitamin C (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg N.E.)[5]	Vitamin B6 (mg)	Folacin[6] (μg)	Vitamin B12 (μg)	Calcium (mg)	Phosphorus (mg)	Magnesium (mg)	Iron (mg)	Zinc (mg)	Iodine (μg)
Infants	0.0-0.5	6	13	60	24	kg×2.2	420	10	3	35	0.3	0.4	6	0.3	30	0.5[7]	360	240	50	10	3	40
	0.5-1.0	9	20	71	28	kg×2.0	400	10	4	35	0.5	0.6	8	0.6	45	1.5	540	360	70	15	5	50
Children	1-3	13	29	90	35	23	400	10	5	45	0.7	0.8	9	0.9	100	2.0	800	800	150	15	10	70
	4-6	20	44	112	44	30	500	10	6	45	0.9	1.0	11	1.3	200	2.5	800	800	200	10	10	90
	7-10	28	62	132	52	34	700	10	7	45	1.2	1.4	16	1.6	300	3.0	800	800	250	10	10	120
Males	11-14	45	99	157	62	45	1000	10	8	50	1.4	1.6	18	1.8	400	3.0	1200	1200	350	18	15	150
	15-18	66	145	176	69	56	1000	10	10	60	1.4	1.7	18	2.0	400	3.0	1200	1200	400	18	15	150
	19-22	70	154	177	70	56	1000	7.5	10	60	1.5	1.7	19	2.2	400	3.0	800	800	350	10	15	150
	23-50	70	154	178	70	56	1000	5	10	60	1.4	1.6	18	2.2	400	3.0	800	800	350	10	15	150
	51+	70	154	178	70	56	1000	5	10	60	1.2	1.4	16	2.2	400	3.0	800	800	350	10	15	150
Females	11-14	46	101	157	62	46	800	10	8	50	1.1	1.3	15	1.8	400	3.0	1200	1200	300	18	15	150
	15-18	55	120	163	64	46	800	10	8	60	1.1	1.3	14	2.0	400	3.0	1200	1200	300	18	15	150
	19-22	55	120	163	64	44	800	7.5	8	60	1.1	1.3	14	2.0	400	3.0	800	800	300	18	15	150
	23-50	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	18	15	150
	51+	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	10	15	150
Pregnant						+30	+200	+5	+2	+20	+0.4	+0.3	+2	+0.6	+400	+1.0	+400	+400	+150	[8]	+5	+25
Lactating						+20	+400	+5	+3	+40	+0.5	+0.5	+5	+0.5	+100	+1.0	+400	+400	+150	[8]	+10	+50

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[1] The allowances are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined.

[2] Retinol equivalents. 1 retinol equivalent = 1 μg retinol or 6 μg β carotene.

[3] As cholecalciferol. 10 μg cholecalciferol = 400 I.U. vitamin D.

[4] α tocopherol equivalents. 1 mg d-α-tocopherol = 1 α T.E.

[5] 1 N.E. (niacin equivalent) is equal to 1 mg of niacin or 60 mg of dietary tryptophan.

[6] The folacin allowances refer to dietary sources as determined by *Lactobacillus casei* assay after treatment with enzymes ("conjugases") to make polyglutamyl forms of the vitamin available to the test organism.

[7] The RDA for vitamin B12 in infants is based on average concentration of the vitamin in human milk. The allowances after weaning are based on energy intake (as recommended by the American Academy of Pediatrics) and consideration of other factors such as intestinal absorption.

[8] The increased requirement during pregnancy cannot be met by the iron content of habitual American diets nor by the existing iron stores of many women; therefore, the use of 30 to 60 mg of supplemental iron is recommended. Iron needs during lactation are not substantially different from those of nonpregnant women, but continued supplementation of the mother for 2 to 3 months after parturition is advisable in order to replenish stores depleted by pregnancy.

Table 2

Estimated Safe and Adequate Daily Dietary Intakes of Additional Selected Vitamins and Minerals[1]

	Age (years)	Vitamins		Pantothenic Acid (mg)	Trace Elements[2]						Electrolytes		
		Vitamin K (μg)	Biotin (μg)		Copper (mg)	Manganese (mg)	Fluoride (mg)	Chromium (mg)	Selenium (mg)	Molybdenum (mg)	Sodium (mg)	Potassium (mg)	Chloride (mg)
Infants	0-0.5	12	35	2	0.5-0.7	0.5-0.7	0.1-0.5	0.01-0.04	0.01-0.04	0.03-0.06	115-350	350-925	275-700
	0.5-1	10-20	50	3	0.7-1.0	0.7-1.0	0.2-1.0	0.02-0.06	0.02-0.06	0.04-0.08	250-750	425-1275	400-1200
Children	1-3	15-30	65	3	1.0-1.5	1.0-1.5	0.5-1.5	0.02-0.08	0.02-0.08	0.05-0.1	325-975	550-1650	500-1500
and	4-6	20-40	85	3-4	1.5-2.0	1.5-2.0	1.0-2.5	0.03-0.12	0.03-0.12	0.06-0.15	450-1350	775-2325	700-2100
Adolescents	7-10	30-60	120	4-5	2.0-2.5	2.0-3.0	1.5-2.5	0.05-0.2	0.05-0.2	0.1-0.3	600-1800	1000-3000	925-2775
	11+	50-100	100-200	4-7	2.0-3.0	2.5-5.0	1.5-2.5	0.05-0.2	0.05-0.2	0.15-0.5	900-2700	1525-4575	1400-4200
Adults		70-140	100-200	4-7	2.0-3.0	2.5-5.0	1.5-4.0	0.05-0.2	0.05-0.2	0.15-0.5	1100-3300	1875-5625	1700-5100

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[1] Because there is less information on which to base allowances, these figures are not given in the main table of the RDA and are provided here in the form of ranges of recommended intakes.

[2] Since the toxic levels for many trace elements may be only several times usual intakes, the upper levels for the trace elements given in this table should not be habitually exceeded.

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Table 3

Mean Heights and Weights and Recommended Energy Intake

Category	Age	Weight		Height		Energy needs (with range)	
	(Years)	(kg)	(lb)	(cm)	(in)	(kCal)	(MJ)
Infants	0.0-0.5	6	13	60	24	kg X 115 (95—145)	kg X .48
	0.5-1.0	9	20	71	28	kg X 105 (80—135)	kg X .44
Children	1—3	13	29	90	35	1300 (900—1800)	5.5
	4—6	20	44	112	44	1700 (1300—2300)	7.1
	7—10	28	62	132	52	2400 (1650—3300)	10.1
Males	11—14	45	99	157	62	2700 (2000—3700)	11.3
	15-18	66	145	176	69	2800 (2100—3900)	11.8
	19—22	70	154	177	70	2900 (2500—3300)	12.2
	23—50	70	154	178	70	2700 (2300—3100)	11.3
	51—75	70	154	178	70	2400 (2000—2800)	10.1
	76+	70	154	178	70	2050 (1650—2450)	8.6
Females	11—14	46	101	157	62	2200 (1500—3000)	9.2
	15—18	55	120	163	64	2100 (1200—3000)	8.8
	19—22	55	120	163	64	2100 (1700—2500)	8.8
	23—50	55	120	163	64	2000 (1600—2400)	8.4
	51—75	55	120	163	64	1800 (1400—2200)	7.6
	76+	55	120	163	64	1660 (1200—2000)	6.7
Pregnancy						+300	
Lactation						+500	

Reprinted from Recommended Dietary Allowances (Revised, 1980). Washington, D.C.: Food and Nutrition Board, National Academy of Sciences—National Research Council.

MJ stands for megajoules. 1MJ = 1,000 KJ (kilojoules) 1kCal = 4.2 KJ

Name ____________________

Open-Ended Sentences

1. On a hot day when I am very thirsty, I like ____________________

2. When I am in a hurry, a quick meal I enjoy is ____________________

3. In a grocery store I am attracted to foods such as ____________________

4. My favorite dessert is ____________________

5. If I have a choice between carrots and potato chips, I choose ____________________

6. If I am responsible for my own lunch, I usually have ____________________

7. A food I really enjoy preparing is ____________________

8. My favorite snack food is ____________________

9. The food I cannot resist is ____________________

10. When I am at a baseball or football game, I like to eat ____________________

11. When I give a party, I always serve ____________________

12. When I watch television, I enjoy eating ____________________

Sample Menus

Using the "Food Composition Table," analyze one of the following menus for its nutrient content. Complete the "Menu Analysis" work sheet by filling in the nutrient amounts for the food listed.

Vegetarian Diet:

Breakfast

1 orange
1 egg, boiled
1 cup (236 g) oatmeal with 1 tsp. (5 g) brown sugar
Tea

Lunch

1 peanut butter and banana slice sandwich on whole wheat bread
Carrot sticks, celery sticks, green pepper slices
6 oz. (180 mL) apple juice

Dinner

1 cup (181 g) brown rice with ½ cup (90 mg) kidney beans, ¼ cup (60 mL) tomato sauce and spices
1 cup (57 g) lettuce with ½ tomato and 2 tbsp. (28 mL) Italian dressing
½ cup (114 g) spinach
2 fig bars
1 apple
Tea

Grapefruit Diet

Breakfast

½ grapefruit
2 eggs, fried in 2 tsp. (11 g) butter
3 slices bacon
Tea

Lunch

2 hot dogs grilled in 2 tsp. (11 g) butter
1 cup (57 g) lettuce with ½ tomato and 2 tsp. (9 mL) oil and vinegar dressing
8 oz. (240 mL) unsweetened grapefruit juice

Dinner

½ grapefruit
8 oz. (228 g) rare beef tenderloin with 1 tsp. (6 g) butter and brandy
Lettuce and tomato salad (see lunch)
½ cup (114 g) spinach
Tea

Name ____________________

Menu Analysis

Menu Chosen ____

Using the "Food Composition Table," find the nutrient amounts in each of the foods you list.

Write menu here.	Calories	Protein (g)	Minerals		Vitamins		
			Calcium (mg)	Iron (mg)	A (mg)	Thiamin (mg)	C (mg)
Breakfast							
Lunch							
Dinner							
Totals							

What is the RDA for your age and sex group for each of the following nutrients?

Calories	________
Protein (g)	________
Minerals	________
Calcium (mg)	________
Iron (mg)	________
Vitamins	________
Vitamin A (I.U.)	________
Thiamin (mg)	________
Vitamin C/Ascorbic acid (mg)	________

The menu you evaluated was ________________________________

Analysis Questions:

1. How does the calorie count in this diet compare to the RDA for calories? Give comparison figures.

____

____

____

2. List the nutrients that did not meet the RDA.

____

____

____

3. Considering the RDA analysis, could this particular diet be improved? How?

____

____

____

Name ______________________

Analyzing Your Menu

Using the "Food Group Guide" and the "Food Composition Table," find the food group and nutrient amounts of each of the foods in the menu you choose.

Write menu here	Food group	Calories	Minerals			Vitamins		
			Protein (g)	Calcium (mg)	Iron (mg)	A (mg)	Thiamin (mg)	C (mg)
Breakfast								
Lunch								
Dinner								
Snacks								
Totals								

1. Does your menu meet the RDA in all nutrients shown and in calorie count? Record the RDA and your menu's totals. Circle different totals.

2. List nutrients in which the menu is deficient.

3. Suggest ways to improve your menu.

Name ______________________

Recommended Dietary Allowances

RDA or Recommended Dietary Allowances are the amounts of essential nutrients believed to be adequate to meet the known nutritional needs for most healthy persons. Some of the RDAs for vitamins and iron are listed below. Review them and answer the questions below.

	B Vitamins				
RDAs for:	*Riboflavin (mg)*	*Thiamin (mg)*	*Niacin (mg)*	*Vitamin C (mg)*	*Iron (mg)*
Females, ages 15—18	1.3	1.1	14	60	18
Males, ages 15—18	1.7	1.4	18	60	18

1. How many B vitamins are listed? ______________________
2. How much more vitamin C than niacin does the fifteen to eighteen-year-old boy need?

   ____

3. How much more iron does a sixteen-year-old girl need than a fifteen-year-old boy? How much more vitamin C?

   ____

4. An eighteen-year-old girl needs approximately ________ times more niacin in her diet than thiamin.

The amounts of the above nutrients found in selected foods are listed on the following page. Review the information and answer the next six questions.

Food	Riboflavin (mg)	Thiamin (mg)	Niacin (mg)	Vitamin C (mg)	Iron (mg)
Cheese pizza (¼ of 14" pie)	0.49	0.38	3.60	12.00	2.70
Cola drink	0.00	0.00	0.00	0.00	0.00
Milk (1 cup)	0.48	0.10	0.20	4.00	0.10
Orange	0.05	0.13	0.50	66.00	0.50
Two scrambled eggs	0.18	0.10	0.10	0.00	2.20
T-bone steak	0.22	0.08	5.60	11.00	3.50

5. How much iron would Linda consume if she ate all of the foods listed on the chart? How much less is this than the RDA for iron?

____

6. If Linda ate everything on the list except the pizza, would she have gotten her RDA for vitamin C?

____

7. Which food has the most vitamin C? ______________________________

8. Which food has the most niacin? ______________________________

9. If one glass of milk has 4 milligrams of vitamin C, how much vitamin C would three glasses of milk have?

____

10. Total the nutrients in cola drink. ______________________________

Name ____________________

Percent of RDA

Using the two charts listed below, determine the percent of the RDA for selected vitamins and minerals the foods provide.

For example: What percent of the RDA for riboflavin for males fifteen to eighteen years of age will a cup of milk provide?

1. RDA for riboflavin for males fifteen and eighteen years old is 1.7 milligrams. A cup of milk provides 0.48 milligrams.
2. $X = \frac{0.48 \text{ milligrams}}{1.70 \text{ milligrams}} \times 100$ percent
3. X = 0.28 X 100 percent
4. X = 28 percent

	Vitamin B				
RDAs for:	Riboflavin (mg)	Thiamin (mg)	Niacin (mg)	Vitamin C (mg)	Iron (mg)
Females, ages 15—18	1.3	1.1	14.0	60.0	18.0
Males, ages 15—18	1.7	1.4	18.0	60.0	18.0

Food	Riboflavin (mg)	Thiamin (mg)	Niacin (mg)	Vitamin C (mg)	Iron (mg)
Cheese pizza (¼ of 14" pie)	0.49	0.38	3.60	12.00	2.70
Cola drink	0.00	0.00	0.00	0.00	0.00
Milk (1 cup)	0.48	0.10	0.20	4.00	0.10
Orange	0.05	0.13	0.50	66.00	0.50
Two scrambled eggs	0.18	0.10	0.10	0.00	2.20
T-bone steak	0.22	0.08	5.60	11.00	3.50

Using the chart on page J-19, determine the percent of each of the following:

1. The percent of RDA for vitamin C for a seventeen-year-old female provided by a slice of cheese pizza
2. The percent of RDA for niacin for an eighteen-year-old female provided by a T-bone steak
3. The percent of RDA for thiamin for a seventeen-year-old male provided by a cola drink
4. The percent of RDA for iron for an eighteen-year-old male provided by all of the foods listed on the chart
5. The percent of RDA for riboflavin for a fifteen-year-old female provided by a breakfast of 2 scrambled eggs, 1 cup of milk, and 1 orange

Name ____________________

RDA Quiz

Directions: True or False. Write a T in the space provided if the statement is true; put an F in the space if the statement is false.

1. The amount of nutrients required by individuals varies with differences in age, sex, and activity.
2. Instinct is a reliable guide for making adequate food choices.
3. The amount of food we eat should depend on the nutrient and calorie requirements of our bodies.
4. Each food group provides many different nutrients. Therefore, eating one food exclusively usually gives you all of the nutrients you need.
5. The RDA are minimum amounts and for most people are less than the amounts their bodies require.
6. The RDA have been revised in the last five years.
7. The vitamin C content of an orange drink can be determined from the RDA.
8. The RDA and USRDA are actually abbreviations for the same thing.
9. By means of the RDA and a food composition chart, decisions can be made about the nutritional quality of foods and eating patterns.
10. The RDA are figured high enough to cover the needs of healthy and sick people.

Essay Questions

11. How might the RDA chart help your life now? In the future?

____

____

____

____

____

12. Does eating three meals a day ensure that you will meet your Recommended Dietary Allowances for that day?

____

____

____

____

____

Name ______________________________

EARTHQUAKE Has Struck!

The major earthquake which has been predicted in California finally has happened. Up and down the state devastation and disaster have occurred.

Your city has been practically destroyed. Many homes and businesses have been leveled. The supermarkets and grocery stores have been destroyed. Water mains are broken, and no fresh water is available.

Think about these questions:

Where will your next meal come from?

____

What will your family eat?

____

What relief organizations might provide nutritionally balanced meals?

____

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Name ______________________________

What to Choose?

1. Limited availability

You are at the state fair. It is time for lunch. There are many fast food places and very little else. What factors must you consider in choosing a nutritionally adequate diet?

____

____

____

2. Limited money

Your parents have left for the weekend, but they forgot to leave any money for food for you and your sisters. You have ten dollars in your wallet. What factors must you consider in choosing a nutritionally adequate diet?

____

____

____

3. Limited money

Your father has been laid off from his job due to cutbacks in the economy. The family's food budget is drastically reduced. What factors must be considered in choosing a nutritionally adequate diet?

____

____

____

____

4. Limited storage space (and weight)

You are planning meals for a backpacking trip you are going on with friends. You are planning your meals. What factors must you consider in choosing a nutritionally adequate diet?

____

____

____

5. Limited time

You work afternoons and evenings and have only a short break to eat. When you do not have much time, what factors must you consider when choosing a nutritionally adequate meal?

____

____

____

Name ____________________

Limited Food Resources

1. You are at a vending machine concession stand with 75 cents to spend. From the ideas listed below, select the most nutritious and palatable meal. Which would you pick and why?

Cheese and crackers	25¢	Orange	25¢
Ice cream bar	25¢	Oatmeal cookie	25¢
Milk	25¢	Candy bar	25¢
Yogurt	50¢	Apple	25¢

2. Joe and Henry are spending the weekend fishing and are staying in a cabin without electricity. There is a woodburning stove but no refrigerator. Neither one has an ice chest. In order to plan nutritious meals, their best plan of action is to:
   a. Do nothing special. After all, it is only for a weekend.
   b. Plan not to bring anything that needs cold storage. Plan to eat the fish they catch for meals.
   c. Eliminate foods that need cold storage and find replacements from the same food groups.
   d. Bring foods that need cold storage and store them in the lake.

3. You have 15 minutes to prepare and eat dinner before going out with friends to the movies. Which would you choose and why?

Peanut butter sandwich
Banana
Orange soda

Chicken sandwich with lettuce and tomato
Milk

Bean soup
Cheese and crackers
Orange juice

Hot dog
Cola drink
(At the theater—you ran out of time to eat!)

Instant Chinese noodle soup
Canned peaches
Milk

Digestion, Absorption, and Metabolism

Digestion is the process by which food and the nutrients in food are broken down into simple forms which can be used by the cells of the body.

Digestion includes both mechanical and chemical processes. ***Mechanical digestion*** is the chewing and churning of food to break it down into smaller particles. ***Chemical digestion*** is the breakdown of food by enzymes and acids. ***Enzymes*** are protein compounds produced by the body which are necessary for the breakdown of food.

Digestive System

Digestion begins in the ***mouth.*** Food is chewed by the teeth (mechanical). Enzymes in the saliva begin to break down the starch in the food (chemical).

The ***salivary gland*** produces and secretes saliva which contains enzymes to break down the starch in food.

The food is passed from the mouth to the stomach through the ***esophagus*** and is further broken down by the squeezing action of the muscles, known as peristalsis (mechanical).

Further breakdown occurs from the muscle action in the ***stomach*** (mechanical) and the hydrochloric acid secretions (chemical). Food generally remains in the stomach three to four and one half hours, depending on the person and the diet.

Most chemical digestion takes place in the ***small intestine.*** Enzymes from the small intestine and pancreas and bile from the liver complete the breakdown of food. The small intestine is where most ***absorption*** takes place. As food moves through the small intestine, the simple forms of nutrients are absorbed into the blood and lymph systems to be transported to the cells.

The ***pancreas*** produces enzymes and digestive juices necessary to complete the breakdown of foods.

The ***liver*** produces bile, which is stored in the ***gall bladder*** to be released in the small intestine. Bile is important in digestion of fat.

What is not absorbed in the small intestine is passed to the ***large intestine.*** Water and some minerals are absorbed from the large intestine. What remains is eliminated by the body.

Absorption

Absorption is the movement of the end products of digestion through the cells of the intestinal wall into circulation.

The small intestine is the major site for absorption. Glucose, fatty acids, glycerol, amino acids, vitamins, and most minerals are absorbed in the small intestine. Water is absorbed in the large intestine.

Once absorbed, the simple forms of the nutrients are transported to individual cells. The cells use these nutrients for energy and building.

Metabolism

The use of nutrients in the body processes is called metabolism. Metabolism includes the chemical changes that occur when absorbed nutrients are used to replace substances that have broken down in the cell, to release energy for body functions, and to build new body tissues. Metabolism takes place in the body's cells.

Factors Affecting Digestion

Emotions

Fear, worry, anger, irritation, stress, and tension all have a negative effect on digestion. Peace, quiet, pleasant atmosphere, cheerful meal companions, and lack of stress have a beneficial influence on digestion.

Current Nutritional Status

Poor nutritional condition can cause a poorly functioning digestive tract. In fact, a deficiency of one nutrient can affect the digestion of all the nutrients.

Type of Food Eaten

Foods that are digested more *slowly* than others are fats and foods rich in fats, high protein foods made tough by overcooking, and foods which arrive to the stomach in big chunks, especially those coated with fats. Carbohydrates are often digested more quickly. Liquids and foods in fine pieces are digested most rapidly.

This information is especially important to people who engage in physical activity, particularly those involved in organized or competitive sports. Digestion should be completed before physical activity begins. Therefore, the content of the pregame or preactivity meals should be considered. A meal high in fat, such as steak, baked potato with sour cream, and salad with lots of dressing, should be eaten at least five hours in advance because it is harder to digest and therefore takes longer. A meal with more carbohydrate and less fat is easier to digest and can be eaten two to three hours in advance.

Intolerances and Allergies to Foods

Nearly everyone has experienced intolerances to some foods, leading to the inability to digest these foods properly. After eating such a food, the symtpoms can range from mild cramping to nausea and vomiting. Sometimes, the allergy or intolerance is actually psychological. People *think* they are sensitive to a food, and the apprehension about eating that food can alone cause digestive upset.

Illness

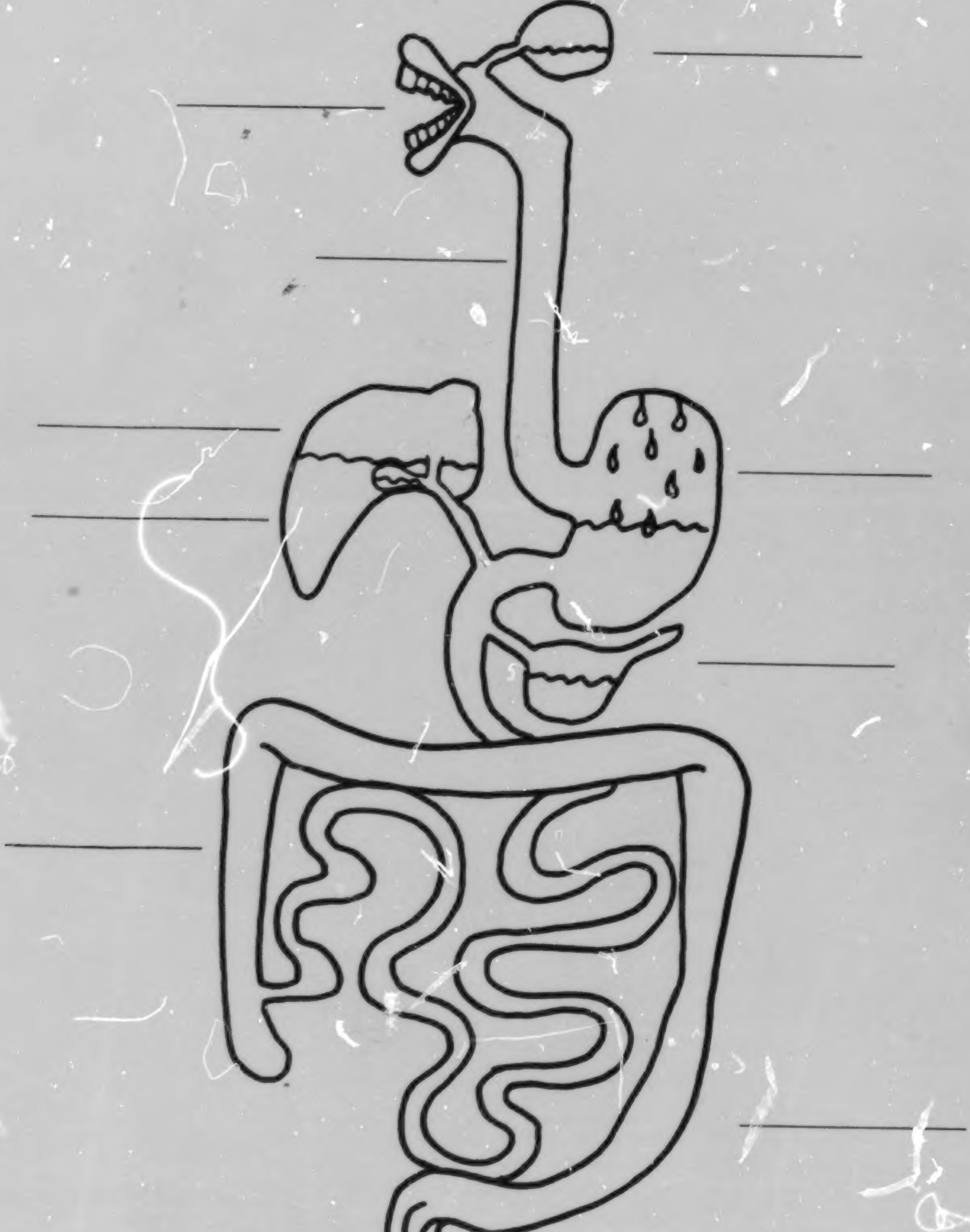
Diseases of the stomach or intestine can dramatically affect digestion.

Those illnesses accompanied by a fever or intestinal upsets or "stomach flu" can affect digestion for the duration of the illness.

More serious are long-term diseases of the stomach or intestines which can affect digestion and absorption. These chronic diseases can alter the kinds and amounts of nutrients which reach the cells. When the disease is extended, the condition can be serious.

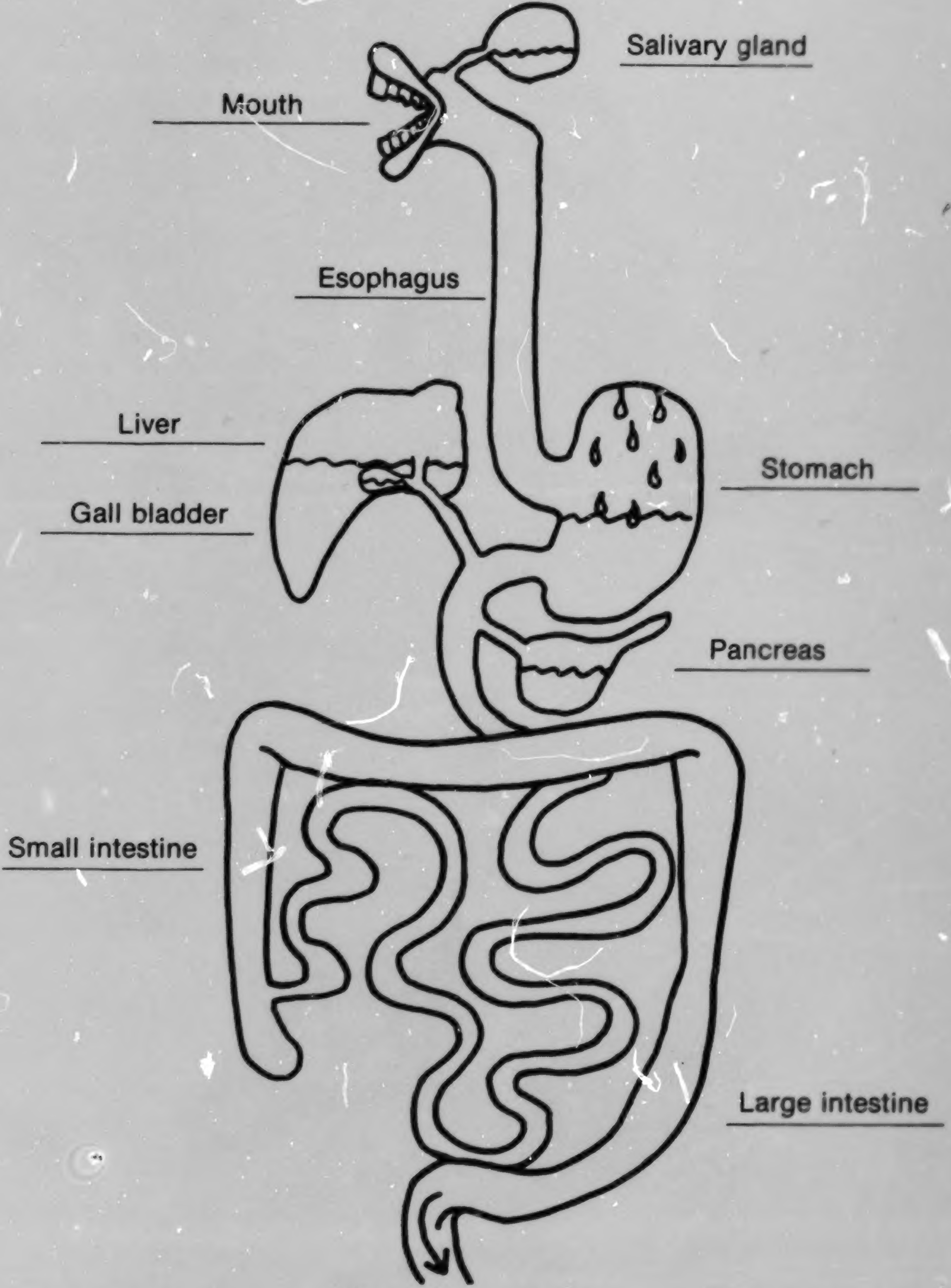
Name ______________________________

Digestive System



J-29

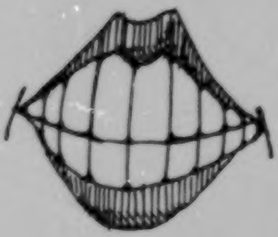
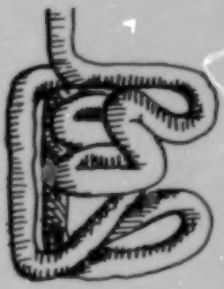
Digestive System (Completed)


Salivary gland
Mouth
Esophagus
Liver
Stomach
Gall bladder
Pancreas
Small intestine
Large intestine

Name ______________________

Fate of Fat, Progress of Protein, and Conversion of Carbohydrate

In the space provided, describe the processes which occur in the mouth, stomach, and small intestine during the digestion of fat, carbohydrate, and protein. Then answer the questions on the reverse side of this work sheet.

A.	Carbohydrates		Proteins	Fats
	Starch	Sugar		
Mouth 				
Stomach 				
Small intestine 				

B.

1. Why is the digestion of these nutrients important?

2. Digestion is the process of breaking down nutrients to simple forms which can be used by the cells. List the end products of digestion for carbohydrate, protein, and fat.

3. Which nutrients are acted upon by:
   a. Gastric enzymes ______ ______ ______
   b. Intestinal enzymes ______ ______ ______
   c. Salivary enzymes ______ ______ ______

4. The purpose of digestion is to prepare foods for absorption. What is the purpose of absorption?

5. Where are the nutrients absorbed?

6. Where are nutrients utilized in the body?

   This process is called

   What does it involve?

Digesting the Nutrients

Carbohydrate

Starch and sugars (such as table sugar and sucrose) are broken down to simple sugars, primarily glucose:

- Mouth
  - Mechanical separation by chewing.
  - Enzymes in saliva begin to break down starches (chemical).
- Stomach
  - Primarily mechanical separation by churning action.
  - Hydrochloric acid may have a limited effect (chemical).
- Small intestine
  - Intestinal enzymes continue the breakdown process of starches to glucose, and sugars are broken down to glucose (chemical).

Protein

Proteins are broken down into amino acids:

- Mouth
  - Mechanical separation by chewing.
- Stomach
  - Primarily mechanical separation by churning action.
  - Hydrochloric acid and gastric enzymes begin to break down proteins into smaller protein parts (chemical).
- Small intestine
  - Intestinal enzymes continue the breakdown process of proteins to amino acids (chemical).

Fat

Fats are broken down into fatty acids and glycerol:

- Mouth
  - Mechanical separation by chewing.
- Stomach
  - Mechanical separation by churning action.
  - Gastric enzymes beginning to break down some fats (chemical).
- Small intestine
  - Major site of fat digestion.
  - Bile is manufactured in the liver and stored in the gall bladder. It is released into the small intestine to help break down large fat molecules to finer particles. Then intestinal enzymes can finish the breakdown process to fatty acids and glycerol (chemical).

Name ____________________

Food Intake Questionnaire

	Yes	No	Where?
Do you eat breakfast?	____	____	____________________
lunch?	____	____	____________________
dinner?	____	____	____________________
snacks?	____	____	____________________

Do you participate in organized sports or a regular activity?

Yes ________________ No ________________

If yes, do you make adjustments in where and what you eat before a sports activity?

Yes ________________ No ________________

How? ____

Do you consider yourself a person under tension?

Yes ________________ No ________________

How would you describe your stress and tension level at:

	High	Moderate	Low	Do not eat this meal
Breakfast	____	____	____	________
Lunch	____	____	____	________
Dinner	____	____	____	________
Snacks	____	____	____	________

Which foods do you not tolerate well? ____________________

____

Digestion

A. Digestion is a complex process and involves many parts of the body. List the body parts given below in the proper order in the blanks provided.

1. ______________ a. Stomach
2. ______________ b. Salivary gland
3. ______________ c. Liver
4. ______________ d. Mouth
5. ______________ e. Gall bladder
6. ______________ f. Small intestine
7. ______________ g. Esophagus
8. ______________ h. Pancreas
9. ______________ i. Large intestine

B. Match the parts of the digestive tract with the functions listed below.

1. ___ Liver a. Produces enzymes
2. ___ Large intestine b. Absorbs water
3. ___ Mouth c. Breaks down food by squeezing
4. ___ Esophagus d. Produces bile
5. ___ Gall bladder e. Produces hydrochloric acid
6. ___ Pancreas f. Absorbs protein, carbohydrate, and fat
7. ___ Stomach g. Breaks down food by chewing
8. ___ Small intestine h. Stores bile

C. What is mechanical digestion? Give an example.

D. Which type of digestion (chemical or mechanical) requires enzymes?

E. Proteins must be broken down into smaller parts during digestion. Select the most appropriate answers to the questions listed below.

1. What kind of protein digestion is done in the mouth?__________.
2. Protein digestion is completed in the ____________________.
3. Proteins are absorbed as__________ ____________________.

Chemical digestion
Small intestine
Stomach
Mechanical digestion
Amino acids
Hydrochloric acid

F. The dietary carbohydrates that must be digested are starches and sugars. Fill in the blanks with the most appropriate answers from the words below.

1. Carbohydrate digestion begins in the ____________________.
2. The major carbohydrate digestion is done in the______________.
3. Carbohydrates are absorbed primarily as ______________.

Glucose
Esophagus
Pancreas
Small intestine
Mouth
Glucose

G. Fat digestion is a complex process. Select the most appropriate answers from the words below.

1. What kind of fat digestion is done in the mouth? ______________.
2. What substance is necessary for fat digestion in the small intestine? ____________________.
3. The major site of fat digestion is the ____________________.
4. Some fats are absorbed as fatty acids and__________________.

Bile
Mechanical digestion
Small intestine
Hydrochloric acid
Liver
Glycerol
Glucose
Chemical digestion

H. List the part or parts of the body involved in the following:

1. Absorption

2. Metabolism

I. Explain how blood is involved in absorption.

J. What is metabolism? Why are digestion and absorption important to metabolism?

Life-Style and Health

Ways in Which Health Is Affected by Food Habits

Good Food Habits	*Bad Food Habits*
Plenty of energy	Lack of energy
Good appearance	Poor appearance
Maintenance of ideal weight	Fatigue
	Obesity
	Malnutrition
	Anemia
	Dental caries

Ways in Which Health Is Affected by Exercise

Enough Exercise	*Excessive*	*Too Little*
Maintenance of ideal weight	Less time spent in other areas of life	Obesity
Good appearance	Bodily injury	Poor muscle tone
Plenty of energy		Poor circulation
Strong muscles		Fatigue

Ways in Which Health Is Affected by Work

Positive	*Negative*
Personal Development	Mental stress
Mental stimulation	1. Boredom
Creative challenge	2. Noise
Physical challenge	Accidents
Socialization	Lack of exercise

Ways in Which Health Is Affected by Leisure

Positive	*Negative*
Relaxation	Boredom
Personal development	No stress release
Self-confidence	Lack of exercise

Ways in Which Health Is Affected by Personal Feelings/Interpersonal Relationships

Positive

Mental well-being from the following:

1. Self-confidence
2. Support from friends

Negative

Mental stress from the following:

1. Nervousness
2. Low self-esteem
3. Fights with friends and family

Ways in Which Health Is Affected by External Environment

Positive

Comfort
Pleasant atmosphere
Relaxation

Negative

Noise
Pollution
Unsafe surroundings
Discomfort
Unsanitary conditions

Name ______________________

What Is Your Health?

1. How would you rate your health? (Circle the appropriate answer.)

   Excellent Average Poor

2. How have the following factors affected your current health?

   a. *Food Habits*

   Improved health No change Contributed to poor health and/or obesity Do not know

   b. *Current Exercise Program*

   Improved health No change Contributed to poor health and/or obesity Do not know

   c. *Current Leisure Activities*

   Improved health No change Contributed to poor health and/or obesity Do not know

   d. *Current Work Activities*

   Improved health No change Contributed to poor health and/or obesity Do not know

   e. *Personal/Interpersonal Relationships*

   Improved health No change Contributed to poor health Do not know

   f. *Current External Environmental Situation*

   Improved health No change Contributed to poor health Do not know

3. At this time, which of the above factors plays the most important part in your health, either negative or positive? Why?

   ____

   ____

   ____

   ____

   ____

Transparency Master

Healthy and Not Healthy

Healthy	Not Healthy

Health Definition

Health = An Individual's Physical, Social, and Mental Well-Being, Not Merely the Absence of Disease

Name ______________________

Lori's Story

Lori is sixteen years old. She is the eldest of three children in an upper middle-class family. Lori has been taught by her parents to strive for success and perfection, and indeed, Lori has little patience for flaws, especially her own.

When she was fifteen years old, Lori decided to lose a little weight. In fact, Lori weighed 5 to 10 pounds more than she should, so her parents were glad to have her slim down a bit. However, she was not satisfied after she had lost 10 pounds. She felt that she should lose a few more pounds, as a safety margin, "just in case." She set a strict 400-calorie-per-day limit for herself. She carefully measured her small meals of chicken, fruits, and vegetables.

Once in a while Lori would slip and gorge herself, eating within a short period of time many packages of cookies or potato chips. She then would purge herself by making herself vomit or by using a whole box of laxatives.

Lori became excessively energetic. She started jogging at 5:30 in the morning, after staying up until 1 or 2 a.m. studying. She left little time to relax, mostly concentrating on schoolwork, exercising, and working around the house. At first her parents and friends admired her determination and devotion to exercise and weight loss; however, as time went on and Lori continued to lose weight, her parents became more and more concerned.

Now Lori looks more like a skeleton than a teenage girl. Her family has pleaded with her to eat more and has even tried to force her to eat more. Lori is suffering from *anorexia nervosa.* This is a psychological disorder. Lori has a compulsive preoccupation with food, weight, and dieting, which leads to large weight losses, overactivity, and a fear of eating. *Anorexia nervosa* can be fatal. Lori has recently begun counseling along with her family. If necessary, she will be hospitalized.

Answer the following questions:

1. How does Lori's life-style affect her health? (If there is no answer, write *none.*)

   Food habits ______________________

   Exercise ______________________

   Leisure ______________________

   Work ______________________

   Personal feelings/interpersonal relationships ______________________

   ____

   External environment ______________________

2. Choose three of the above factors and show how they interact to affect Lori's health.

Name ______________________

Health Style Quiz

1. According to the World Health Organization, health is not only physical well-being, but ______________ and ______________ well-being as well.

2. Madeline jogs three miles a day. Explain how this might affect her eating habits, her personal feelings, and ultimately her health.

3. Russ leads an active life. He is involved in football and track. He is also student body president and leader of the local Boy Scout troop. Lately, he has begun working part time. Explain how Russ's work situations might affect his leisure activities and eating habits and, ultimately, his health.

4. How could you change your own life-style to improve your health?

Stress Information Sheet

Stress, whether physical or mental, affects nutritional needs. Stress can arise from negative or positive influences. Infections, illness, surgery, burns, emotions, drugs, athletics, pregnancy, school or work pressures, family problems, marriage, graduation, a new job, birth of a baby, and divorce are some of the things that can trigger stress reactions. Some of these stress-causing situations and how they affect nutritional needs are discussed in the following paragraphs.

Illness

Illness can affect the way the body uses nutrients from food. Illness can also interfere with normal appetite, making it difficult for the ill person to maintain an adequate nutrient and energy intake at a time when adequate intake is important.

A person who is in poor nutritional health may be less able to ward off illness and may also face an increased danger of secondary infection. Some nutrients are lost from the body in fairly large amounts during illness, while others are diverted from normal routes of metabolism and may be made unavailable in the body.

Diarrhea and vomiting often accompany illness. Both may cause large losses of water, sodium, magnesium, and potassium. Dehydration is a major concern in severe diarrhea and vomiting, especially in infants and older people. Liquids, usually water, weak tea, flat carbonated beverages, or juices, are given to help prevent dehydration. It is important during illness to make sure that energy and nutrient intake are adequate.

Infection

During an infection the patient often experiences loss of appetite. Depending on the infection there may be a tendency to consume a diet consisting mostly of liquids, which may exclude foods that provide protein and other essential nutrients. Fever often accompanies infection and can cause an increased metabolic rate as well as sweating due to the higher temperature. An increased metabolic rate would require an increase in calories to maintain normal functioning levels, but this may be offset by a decrease in activity during illness. Heavy sweating during a fever can cause a loss of nutrients, especially water, sodium, and potassium. Extremely severe fever and sweating can cause a loss of calcium and protein. When insufficient protein is consumed, due to a decreased appetite, nitrogen (from protein) may be lost in the urine. There may also be reduced blood levels of vitamin A in severe and prolonged infections.

Surgery

Good nutrition is important for the person who is undergoing surgery. If a person is in a poor nutritional state, surgery may be postponed and measures taken to improve his or her nutrition. An increase in protein, vitamins, and minerals may be given to improve the patient's ability to withstand and recover from the stress of surgery. Adequate stores or intakes of protein, glycogen (stored carbohydrate), vitamin K (to help in blood clotting), and vitamin C are important to the patient undergoing surgery.

Following surgery, a patient needs more protein, vitamins, and minerals. The restoring and maintaining of fluid and electrolyte balance are also very important. Electrolyte balance is the distribution of the mineral salts among the body fluids. A small disruption in this balance can be very serious. A sufficient calorie intake is essential to ensure that protein is used for building and repairing tissue and to supply needed energy for other bodily functions.

Intravenous fluids containing glucose (a carbohydrate) may be started immediately following an operation to prevent dehydration and shock. Vitamin C and thiamin may be added to aid in the healing of the wounds and for metabolism. Protein is needed for tissue synthesis, wound healing, avoidance of shock, bone healing, resistance to infection, and transportation of fat in the body.

Water is extremely important to ensure against dehydration from fluid losses resulting from vomiting, hemorrhage, fever, diarrhea, exudates, and fluid drainage.

Adequate mineral intake is necessary to replace mineral losses. Potassium and phosphorus are lost when tissues are broken down; electrolyte imbalances of sodium and chlorine result from fluid loss. Iron deficiency can result from blood loss and faulty iron absorption.

Vitamin C is necessary for wound healing. An increase in B vitamins is necessary when protein and calories are increased. Vitamin K is essential for normal blood clotting.

However, a healthy person in good nutritional status, having minor surgery or illness lasting less than ten days and who is ambulatory and eating well without a history of previous malnutrition, has no need for special nutrition therapy.

Burns

Patients with excessive burns have nutritional problems due to a large loss of fluids, electrolytes (sodium, potassium, chlorine), and serum proteins from the burned areas. There may also be losses of nitrogen and potassium in the urine. Patients with severe burns are often depressed and have little appetite. There may also be fever and infection. As the body attempts to heal the burn tissue and build new tissue, increases in protein and calories are needed. With a severely burned patient, intravenous fluid therapy may be given with the fluid containing protein, sodium, chlorine, and water as well as other vitamins and minerals. When the patient is able to eat, the diet should include increased amounts of protein, calories, vitamin C (to help with wound healing), B vitamins, fluids, and other vitamins and minerals.

Emotional-Psychological Factors

Controversy exists about how stress of a psychological or emotional nature affects specific nutrients. Psychological stress may come from anxiety, fear, frustration, or worry. Some studies on the effects of stress on nutrition suggest that the many stressful aspects of modern life may have an unrecognized influence on nutritional balance. Adolescents may be particularly susceptible because of their vulnerability to school pressures, social worries, and emotional upheavals during a time when their bodies are already undergoing the extra stresses of growth spurts, maturation, and hormonal changes.

While many people eat more under tension and may go on "binges" (often of nonnutritious foods), others cannot eat when under stress or pressure. Both types of behavior can affect the nutritional status of a person. Some people may eat out of boredom and consume many more calories than they need. Some research shows that a highly stressful job or life situation may increase the need for B vitamins.

Emotions do affect appetite, which will affect nutrient intake. But people respond differently to various emotions. One person may respond to feelings of excitement about an upcoming trip by becoming hungrier than usual, while another person may become too excited to eat at all.

Drugs and Alcohol

Drugs affect the nutrients in the body by interfering with their absorption, increasing their absorption, affecting the organs of digestion, or creating an increased need for specific nutrients.

Anorexics—Anorexics are used to curb the appetite in the hope of losing weight. Amphetamines are often used. They have been found to be of little use in treating obesity and may be dangerous as food intake may be so minimal as to create nutritional deficiencies.

Antacids—Antacids are taken for acid stomach, gas, and ulcers. An excessive use of antacids can interfere with the absorption of the minerals magnesium and phosphorus and lead to adult bone loss. Antacids can also increase the absorption of calcium, leading to calcium deposits in the soft tissues. If baking soda is used as a digestive aid, the excess sodium can cause water retention and swelling, particularly in the feet and ankles.

Antibiotics—Antibiotics are used to treat infections. It is important to take them if they are prescribed by a doctor for treatment of specific infections. Antibiotics may cause nausea vomiting, and diarrhea. Antibiotics interfere with the absorption of minerals, particulary potassium and iron. They also increase the need for other nutrients, including vitamins and protein. If someone is on long-term antibiotic therapy, special attention should be given to that person's nutritional needs.

Aspirin—Aspirin is used as a pain killer. Aspirin can cause stomach distress, can irritate the intestine, and can cause internal bleeding. It also increases the need for iron, vitamin C, and folic acid (a B vitamin) and prolongs bleeding time. Anemia can result from the internal bleeding and the increased need for iron and folic acid.

Diuretics—Diuretics are used to eliminate extra water retained due to heart, liver, or kidney problems. Often called "water pills," these medications serve a useful purpose when prescribed by a doctor to treat the conditions described above. Indiscriminate use of diuretics to treat obesity is not a good idea as only water is lost, fat is not reduced, and most diuretics cause some loss of potassium and magnesium as well as excessive loss of fluids. Poor appetite, nausea, and diarrhea are common side effects of taking diuretics. Diuretics should not be used during pregnancy.

Laxatives—Laxatives are taken to aid bowel movements. Laxatives include mineral oil, bulk formers, and cathartics (such as Epsom salts). Mineral oil can decrease the absorption of the fat-soluble vitamins A, D, E, and K, while bulk formers and cathartics can interfere with the body's absorption of minerals. Also, prolonged use of laxatives can interfere with the body's natural mechanisms for proper elimination.

Nutrient supplements—Excessive use of vitamin pills, mineral pills, or protein supplements, or excessively high dosages of these nutrients, can be harmful. High doses of vitamins A and D can be toxic, and even fatal, if taken over a long period of time. High levels of vitamin C can irritate the stomach and intestinal tract and may lead to kidney stones. Iron and potassium supplements can irritate the intestinal tract. Also, high levels of one nutrient can interfere with the absorption and use of another nutrient. For example, high levels of phosphorus (from food supplements or drinking a lot of soda pops with phosphoric acid in them) and zinc can interfere with calcium absorption.

Oral contraceptives (birth control pills)—The level of estrogen hormones in birth control pills increases the need for a number of vitamins and minerals. The pill has the most effect on the B vitamins, especially folic acid and vitamin B-6.

Sedatives—Sedatives are used to reduce anxiety and tension. Often called "downers," these drugs can cause stomach and intestinal upset. Some increase the need for folic acid and C and D vitamins. The effect of these drugs is often increased by alcohol and should not be taken with alcohol and only when prescribed by a doctor.

Stimulants—Stimulants are used to alleviate depression. They have also been used with varying degrees of success in treating hyperactivity in children. Stimulants, also called "uppers," can cause a marked retardation in growth and may interfere with nutrient absorption.

Medications are important in managing health problems, but they almost always have some undesirable side effects. Each individual will react differently to drugs, depending on his or her heredity, nutritional state, age, disease conditions present, exposure to environmental hazards, and other factors. People should not take medications and drugs unless they have to, under the advice of a doctor, and they should eat an adequate, balanced diet. The combination of an inadequate diet plus medication can lead to a nutritional deficiency.

Athletics

A popular myth is that athletes, because of the stress of increased physical activity, need large supplements of protein, vitamins, and minerals to perform at their peak. Many athletes resort to diets composed of protein powders, vitamins, and mineral supplements in the mistaken belief that this type of diet will increase their strength, muscles, stamina, and performance. This is not only expensive but also untrue. A diet based on the Four Food Groups will meet all the nutritional requirements of athletes and persons engaged in hard physical activity as long as sufficient calories are supplied to meet the increased demands of physical activity. These increased calories can be provided with additional servings from the Four Food Groups. It is not necessary to resort to vitamin and mineral supplements, high protein diets, or protein powders. These are not only unnecessary and expensive but also can be harmful if taken in large quantities or over long periods of time.

The theory among some athletes and coaches that a high-protein diet prior to a game is advantageous has been disproven. A diet high in complex carbohydrates prior to a game is more conducive to optimum performance. The pre-event meal should be eaten at least two to three hours before competition; this period of time is sufficient for digestion and absorption of the meal. Some athletes may experience discomfort from a pregame meal just before competition. Emotional stress and nervous tension may be some of the underlying causes of these symptoms.

With excess physical exertion, athletes should be sure to get sufficient water, as dehydration can be a problem.

Pregnancy

The diet of a pregnant woman or a woman who is nursing a baby is very important because she is providing nourishment to the child in the uterus or in the milk she secretes for the baby. This is especially true of the young mother who is still growing. Her diet needs to provide not only for her own nutritional needs but also for the needs of her baby. Because of this unusual situation, the pregnant woman needs more of all the nutrients every day of her pregnancy.

A pregnant woman needs to consume about 300 extra calories a day. If insufficient nutrients are provided, there will not be enough nutrients available for the physical and mental development of the baby. Insufficient protein can cause the baby to be born with physical defects or to be mentally retarded. Other nutritional deficiencies can also interfere with proper development.

Pregnancy puts stress on the body of a teenager who is still growing and developing as well as meeting the needs of the developing child. Some problems in pregnancy happen because the body does not have enough nutrients to respond to the extra demands of this stress. It has been shown that teenage girls who consume enough nutrients have fewer problems during pregnancy, childbirth, and recovery. In addition, there is a better chance that enough milk will be produced to nurse the babies.

A young woman who has good food habits and is well nourished when she becomes pregnant has little cause for concern. She will need to alter her diet by increasing her food intake to increase the amount of nutrients she is consuming. This can be done by increasing the number of servings from the Four Food Groups in the following way:

Food group	Servings	Nutrients of special concern
Bread and Cereal Group	4	Protein, carbohydrate, iron, and B vitamins
Fruit and Vegetable Group		
Vitamin C-rich fruits and vegetables—oranges, orange juice, grapefruit, grapefruit juice, lemons, limes, tangerines, broccoli, cabbage, tomatoes, tomato juice, cantaloupe, strawberries, green and red peppers, potatoes	1	Vitamin C
Dark green vegetables—spinach, collards, kale, mustard greens, deep green lettuce (red leaf, romaine, endive), bok choy, swiss chard, broccoli, brussels sprouts, cabbage, and other dark leafy greens	1	Folic acid, vitamin A, iron
Other fruits and vegetables— (Note that deep yellow fruits and vegetables—carrots, winter squash, sweet potatoes, and apricots—provide vitamin A.)	1 to 2	
Meat, Poultry, Fish, and Beans Group At least one serving should be legumes—dried beans, peas, lentils, soybeans, and soybean products.	4	Protein, iron
Milk and Cheese Group	4	Calcium, protein, B vitamins

It is also important for a pregnant woman to drink at least six glasses of water and other liquids a day.

The requirement for folic acid and iron is high during pregnancy. It may be necessary to take supplements of these two nutrients if the required amounts cannot be obtained from the average diet. A doctor can determine if a supplement should be prescribed.

A pregnant woman should expect to gain around 24 to 30 pounds (10.9 to 13.6 kg) during pregnancy. Pregnancy is no time to be dieting. The developing baby needs nutrients, and to be deprived of even one nutrient can be dangerous to his or her development.

A pregnant woman should avoid alcohol, cigarettes, drugs, and caffeine. Research has shown that all of these substances can harm the developing baby. Even drugs such as aspirin, cold remedies, and antacids can be harmful. A pregnant woman should check with her doctor before she takes any medication.

Name ______________________________

Stress

Directions: Read the "Stress Information Sheet" and answer the following questions:

1. What are two ways illness can affect the body?

____

____

____

2. What often accompanies an infection?

____

____

____

3. What nutrients may need to be increased during an infection?

____

____

____

4. During an illness, what may cause large nutrient losses of sodium and potassium?

____

____

____

5. What is a major concern with excessive diarrhea and vomiting? How can it be controlled?

____

____

____

6. What nutrients need to be given to improve a patient's ability to withstand and recover from the stress of surgery?

____

____

____

7. Why do patients with excessive burns have nutritional problems?

8. What nutrients should be given to patients with excessive burns?

9. How can taking the following drugs affect the nutritional status of the body?

Aspirin

Laxatives

Antacids

Alcohol

Birth control pills

Nutrient supplements

10. Why is it unnecessary for athletes to add vitamin, mineral, or protein supplements to their diets?

11. What are five advantages a woman will have during and after pregnancy if her body gets enough nutrients?

____

____

____

____

____

12. How many servings does a pregnant woman need daily from each of the Four Food Groups?

Bread and Cereal Group ____________________
Fruit and Vegetable Group ____________________
Meat, Poultry, Fish, and Beans Group ____________________
Milk and Cheese Group ____________________

Name ______________________

Effects of Stress on Nutritive Needs

Directions: Place the letter of the correct answer next to each number.

Types of Stress

_____ 1. Infection

_____ 2. Illness

_____ 3. Surgery

_____ 4. Burn

_____ 5. Excessive use of nutrient supplements

_____ 6. Athletic

_____ 7. Alcoholic beverages

_____ 8. Pregnancy

Effect on Body's Nutritive Needs

A. Increased need for vitamin C to aid healing and protein for building

B. Depletion of water due to sweating

C. Loss of many different nutrients due to loss of appetite and diversion of nutrients from normal routes of metabolism

D. Increased calorie intake to meet increased activity levels

E. Toxic levels of vitamins A and D; kidney stones and stomach irritation from large doses of vitamin C

F. Interferes with absorption of nutrients and provides calories which may decrease appetite, reducing nutrient intake

G. Large loss of fluids, requiring an increased intake of water and electrolytes (minerals—sodium, potassium, and chlorine)

H. Increased servings in food groups to increase amounts of protein, vitamins (especially folic acid), and minerals (especially calcium, phosphorus, magnesium, and iron)

Name ______________________

Stress and Nutritional Needs

A. Answer the following questions using complete sentences.

1. Jack has just had major surgery and will be staying in the hospital for two weeks to recover. Describe three ways surgery can influence nutritional needs.

____

____

____

____

____

____

2. Joe went to the doctor and was told he had an infection. Describe three ways in which infection can influence nutritional needs.

____

____

____

____

____

____

3. Janet has severe burns over her body due to an accident in the home. Describe three ways burns can influence nutritional needs.

____

____

____

____

____

____

4. James uses an excessive amount of aspirin every day to relieve his headaches. Describe three ways in which excessive use of aspirin can influence nutritional needs.

5. John is a chronic alcoholic. Describe three ways in which excessive drinking of alcoholic beverages can influence nutritional needs.

6. Alice has just learned that she is pregnant. Describe three ways in which pregnancy can influence nutritional needs.

B. Identify and explain three ways in which emotional stress can influence nutritional intake.

Name ____________________

Energy Needs

I. Basal Metabolic Rate (BMR)

Using ideal weight, calculate your BMR. Change pounds to kilograms:

$150 \text{ pounds} \times \frac{1 \text{ kilogram}}{2.2 \text{ pounds}} = 68 \text{ kilograms}$

$\_\_\_\_\_\_\_\_ \text{ pounds} \times \frac{1 \text{ kilogram}}{2.2 \text{ pounds}} = \_\_\_\_\_\_\_\_ \text{ kilograms}$

Multiply your weight in kilograms by the BMR factor. (The BMR factor for men is 1; for women, it is 0.9.)

68 kilograms X 0.9 calories = 61 calories per hour
__________kilograms X __________calories =__________calories per hour

Multiply the calories used in one hour by 24 hours:

61 calories X 24 hours = 1,464 calories per day
__________calories X 24 hours = __________calories per day

BMR ______________________________

II. Activity Needs

Sedentary: Add 50 percent of your BMR.

Sitting most of the day, about two hours, moving about slowly or standing.

Light Activity: Add 60 percent of your BMR.

Typing, teaching, walking, but no strenuous exercise.

Moderate Activity: Add 70 percent of your BMR.

Walking, exercising about three times a week, little sitting.

Strenuous Activity: Add 100 percent of your BMR.

Very active, exercising daily, little sitting.

Multiply BMR calories by your appropriate activity factor:

1,464 calories X 0.70 = 1,024 activity calories per day
__________calories X __________ = __________activity calories per day

Activity needs______________________________

III. Total Energy Needs

Add BMR and activity needs:

1,464 calories + 1,024 calories = 2,488 calories
__________calories + __________calories = __________calories

Ideal Height and Weight Chart

Height		Weights									
		14 years		15 years		16 years		17 years		18 years	
Feet	Inches	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl
4	6	72									
4	7	74	78								
4	8	78	83	80							
4	9	83	88	83	92						
4	10	86	93	87	96		101				
4	11	90	96	90	100	90	103		104		
5	0	94	101	95	105	96	108		109		111
5	1	99	105	100	108	103	112	106	113		116
5	2	103	109	104	113	107	115	111	117	116	118
5	3	108	112	110	116	113	117	118	119	123	120
5	4	111	117	115	119	117	120	121	122	126	123
5	5	118	121	120	122	122	123	127	125	131	126
5	6	122	124	125	124	128	125	132	128	136	130
5	7	128	130	130	131	134	133	136	133	139	135
5	8	134	133	134	135	137	136	141	138	143	138
5	9	137	135	139	137	143	138	146	140	149	142
5	10	143	136	144	138	145	140	148	142	151	144
5	11	148	138	150	140	151	142	152	144	154	145
6	0			153		155		156		158	
6	1			157		160		162		164	
6	2			160		164		168		170	

Reprinted with permission from "Average Height-Weight Tables for Boys and Girls" from *Nutritional Support of Medical Practice*. Edited by Howard A. Schneider and others. Hagerstown, Md.: Harper and Row Publishers, © 1977, Table A-10 in the appendix.

Personal Diet Plan

Name ______________________________

Ideal weight ______________________________

Current weight is ↑ ↓ or = to ideal weight (circle one).

Estimate caloric needs ______________________________

To Gain Weight	*To Lose Weight*
1 pound (0.45 kg) per week, add 500 calories	1 pound (0.45 kg) per week, subtract 500 calories
2 pounds (0.91 kg) per week, add 1,000 calories	2 pounds (0.91 kg) per week, subtract 1,000 calories

Adjusted caloric needs ______________

When planning your meal pattern, keep these six guidelines in mind:

1. Choose a variety of foods.
2. Choose complex carbohydrates and fiber.
3. Avoid too much fat.
4. Avoid too much salt.
5. Eat enough calories to maintain ideal weight.
6. Avoid too much sugar.

My Daily Diet Plan

I need __________ calories per day.

Start with minimum servings from the Four Food Groups:

Bread and cereal—4 servings
Fruit and vegetable—4 servings
Milk and cheese—4 servings
Meat, poultry, fish, and beans—2 servings
Total: 1,300 calories

__________ Additional calories need to be provided as follows:

Guide to Good Eating for Health and Fitness

1. Choose a variety of foods.
2. Choose complex carbohydrates and fiber.
3. Avoid too much fat.
4. Avoid too much salt.
5. Eat enough to maintain an ideal weight.
6. Avoid too much sugar.

Calorie Additions

25 Calories

½ cup cooked or 1 cup raw vegetables

40—50 Calories

1 serving raw or unsweetened fruit
1 tablespoon (14 g) jam, jelly, honey, or syrup

75—80 Calories

1 slice of bread
1 cup skim milk (240 mL)
1 ounce cheese (28 g)
1 egg
½ cup cooked cereal
¾ cup dry cereal, unsweetened

100 Calories

1 tablespoon (16 g) of peanut butter
1 tablespoon (15 mL) oil or salad dressing, (14 g) mayonnaise
1 tablespoon (16 g) butter or margarine

125 Calories

1 cup (240 mL) low-fat milk
1 medium potato or 1 cup (182 g) potatoes
½ cup (65 g) ice cream
Regular soft drink (12 ounces) (360 mL)

150 Calories

1 cup (240 mL) of whole milk
1 bag of potato chips
¾ cup dry cereal, sweetened

175 Calories

3 ounces (84 g) lean meat, poultry, or fish
¾ cup (135 g) cooked dried beans, peas, lentils, or soy beans
1 slice of pizza
2 3-inch oatmeal cookies

200 Calories

1 average serving of french fries
1 taco
1 cup (240 mL) chocolate milk

250 Calories

1 hamburger

300 Calories

1 cheeseburger
1 waffle with syrup

400 Calories

1 milkshake (12 ounces) (360 mL)

Name ________________________

Daily Diet Plan

Pam needs 1,700 calories a day.

Start with minimum servings from Four Food Groups:

Bread and Cereal—4 servings
Fruit and Vegetable—4 servings
Milk and Cheese—4 servings
Meat, Poultry, Fish, and Beans—2 servings

Total: 1,300 calories

________ additional calories need to be provided as follows:

Dan needs 2,500 calories a day.

Start with minimum servings from Four Food Groups:

Bread and Cereal—4 servings
Fruit and Vegetable—4 servings
Milk and Cheese—4 servings
Meat, Poultry, Fish, and Beans—2 servings

Total: 1,300 calories

________ additional calories need to be provided as follows:

Name ____________________

Calorie Quiz

Directions: Using materials you have available, answer the following questions:

1. Madeline has calculated her BMR to be 1,000. Her activity level is moderate. What are her caloric needs per day?

2. Madeline is fifteen years old. She is 5 feet tall. What is her ideal weight? She weighs 104 pounds. Does she need to gain, lose, or maintain her weight? Should she adjust her caloric level?

3. If Madeline eats the recommended number of servings for teenagers from the Four Food Groups, will she be meeting her caloric needs?

   If not, what would you suggest she add to her diet?

Name ____________________

Vegetarian by Choice

Directions: In the column on the left, list three reasons why a person might become a vegetarian. Give an example of each reason you list.

Example: Health — Concern for the amount of cholesterol or fat in a diet high in red meat

1. ____________________ ____________________
____
____

2. ____________________ ____________________
____
____

3. ____________________ ____________________
____
____

Name ____________________

Vegetarian Vocabulary

Directions: Write a definition after each of the terms.

1. Protein

2. Amino acids

3. Essential amino acids

4. High-quality protein

5. Animal protein

6. Plant protein

7. Malnutrition

8. Nutritionally adequate diet

9. Vegan

10. Lacto-ovo vegetarian

Vegetarian Vocabulary
Answer Key

1. Protein	Chemical compounds composed of carbon, hydrogen, oxygen, nitrogen, and sulfur arranged into amino acids from which the body can make its own proteins
2. Amino acids	Chemical compounds linked together to form proteins
3. Essential amino acids	Amino acids that the body cannot make: methionine, threonine, tryptophan, isoleucine, leucine, lysine, valine, phenylalanine, and histidine
4. High-quality protein	Protein containing all of the amino acids essential for humans
5. Animal protein	Protein found in sources such as meat, poultry, fish, eggs, cheese, and milk
6. Plant protein	Protein found in sources such as fruits, vegetables, grains, nuts, and legumes
7. Malnutrition	Deficiency, excess, or imbalance of nutrients or calories
8. Nutritionally adequate diet	A diet that meets nutrient requirements
9. Vegan	One who eats neither animal flesh nor animal products
10. Lacto-ovo vegetarian	One who eats no animal flesh but consumes animal products, including eggs, milk, and cheese (Lacto refers to milk and milk products; ovo refers to eggs.)

Name ______________________

Know Your Protein Sources

Directions: Listed below are foods commonly found in meals selected by teenagers. Place a check (✓) under animal or plant after each food to show its source of protein.

Check (✓) Source of Protein

List of food	Animal	Plant
1. Hamburger patty		
2. Cheese		
3. Whole wheat bread		
4. Soybeans		
5. Tomato soup		
6. Milk		
7. Rice		
8. Baked beans		
9. Baked potato		
10. Eggs		

What Is a Vegetarian Diet?

A *vegetarian diet* is generally one that is described as meatless. A *vegan* diet includes only foods from plant sources (i.e., nuts, grains, vegetables, and fruits) and excludes all animal flesh and animal products. Malnutrition can result if a person omits the animal products and fails to obtain the other nutrients necessary to achieve nutritional adequacy. The strict vegan diet may lead to nutrient problems with deficiencies of vitamins and minerals such as calcium, iron, zinc, riboflavin, vitamin B_{12}, and for children not exposed to sunlight, vitamin D.

A *lacto-ovo vegetarian diet* has certain advantages over the strict vegetarian diet. Although it excludes animal flesh, it does include animal products (i.e., milk, eggs, and cheese). This diet can be nutritionally adequate, varied, and economical. The person practicing this diet has an opportunity to improve his or her nutritional knowledge and awareness and to develop creative, varied menus. Studies have shown that people who adhere to this form of diet may have lower serum cholesterol levels. The lacto-ovo vegetarian can adapt the Food Group Guide to achieve a nutritionally adequate diet by using at least two servings of protein-rich foods each day as a substitute for two meat servings.

Planning a Vegetarian Diet

More attention should be given to planning when the diet is limited in all food products of animal origin. The most important safeguard is the use of a great variety of foods in the diet. The greatest risk comes from undue reliance on a single plant food source, usually a cereal grain or starchy root crop. Legumes, particularly soybeans, are rich in protein B-vitamins and iron. Grains are good sources of carbohydrates, proteins, thiamin, iron, and trace minerals. Nuts and other seeds contribute fat, protein, B-vitamins, and iron. Dark green, leafy vegetables are sources of calcium, riboflavin, and carotene (a precursor of vitamin A) and should be used liberally by total vegetarians. Plant foods do not contain vitamin B_{12}. Milk and eggs are satisfactory sources, but the total vegetarian should consume fortified soybean milk or a vitamin B_{12} supplement. An inadequate intake of vitamin B_{12} can lead to anemia.

Protein Knowledge

Care must be taken to ensure that all of the essential amino acids are consumed by the vegetarian. Animal products contain high-quality proteins, which contain a balance of the essential amino acids. Plant foods may not contain all of the essential amino acids. Fortunately, though, low-quality protein foods can be eaten in combination to fill in the essential amino acids missing in each food item. A mixture of proteins from a variety of plant sources can provide all of the essential amino acids. Seeds, nuts, grains, and legumes can be combined in interesting and appetizing ways. Some examples of combinations of protein foods are as follows:

Plant and Plant Combinations

Beans/corn	baked beans and cornbread
Beans/wheat	baked beans and whole wheat bread
Lentils/rice	soup
Beans/rice	rice and bean casserole

Plant and Animal Combinations

Cereals/milk	grain cereal with milk
Pasta/cheese	macaroni and cheese
Bread/cheese	cheese sandwich
Beans/cheese	refried beans topped with grated cheese
Rice/milk	rice cooked in milk; rice pudding
Bread/egg	poached egg on toast

Name ______________________

Vegetarian Comparison

Directions:

Read the information sheet entitled "What Is a Vegetarian Diet?"

Please answer the following questions:

A. Write your own definition of each of these words:

1. Vegan ______________________

2. Lacto-ovo vegetarian ______________________

B. List the similarities and any differences between the two diets in the columns below:

Similarities

1. Vegan ______________________

2. Lacto-ovo vegetarian ______________________

Differences

1. Vegan ______________________

2. Lacto-ovo vegetarian ______________________

Name ______________________________

Vegetarian Menu

Directions:

1. Using the information you have learned, compare the two sample menus below by listing four advantages and four disadvantages of each meal.
2. Compare your lists with those of other class members.
3. Write a paragraph in which you analyze the two sample menus for nutritional balance.

Menu A: "Typical" Meal	Menu B: Lacto-Ovo Vegetarian Meal
Roast beef slices	Rice casserole (rice, cheese, nuts)
Baked potato, sour cream, butter	Baked carrots
Corn on the cob, butter	Green salad, oil and vinegar dressing
Lettuce salad, bleu cheese dressing	Whole wheat bread, butter
Whole wheat roll, butter	Fruit compote (apples, pears, peaches)
Boysenberry pie with scoop of frozen yogurt	Milk (low-fat)
Coffee	

Advantages:	*Advantages:*
1.	1.
2.	2.
3.	3.
4.	4.

Disadvantages:	*Disadvantages:*
1.	1.
2.	2.
3.	3.
4.	4.

Paragraph:

Examples of Responses to Vegetarian Menu

Menu A: "Typical" Meal

Roast beef slices
Baked potato, sour cream, butter
Corn on the cob, butter
Lettuce salad, bleu cheese dressing
Whole wheat roll, butter
Boysenberry pie with scoop of frozen yogurt
Coffee

Advantages:

1. Menu is nutritionally adequate.
2. Animal protein foods contain the minerals and vitamins which are difficult to obtain in a vegetarian diet.
3. Meal is convenient. Many restaurants and fast food eating establishments serve this kind of menu.
4. Meat symbolizes prosperity and is tied to social status.
5. Animal protein is a high-quality protein.
6. Animal protein makes it easier to meet daily needs for amino acids.
7. It may be more humane to have well-cared-for livestock prior to slaughter than not to use the animals for food and let them starve.

Disadvantages:

1. Meat is often expensive, depending on the cut of meat.
2. Diet may allow one to consume excessive calories and/or protein.
3. Diet can lead to obesity.
4. Diet is high in saturated fat.
5. Diet is limited in fiber content.

Menu B: Lacto-Ovo Vegetarian Meal

Rice casserole (rice, cheese, nuts)
Baked carrots
Green salad, oil and vinegar dressing
Whole wheat bread, butter
Fruit compote (apples, pears, peaches)
Milk (low-fat)

Advantages:

1. Menu is nutritionally adequate and balanced.
2. Variety of fruits and vegetables provides variety in minerals, vitamins, and fiber.
3. Menu can be less expensive to prepare. Red meat is often costly, depending on the selection of meat.
4. Menu does not include meat, which allows animals to continue living.
5. Using plant protein may promote a more economic use of the land.
6. Diet may have a lower amount of cholesterol and saturated fat.

Disadvantages:

1. Menu planning may take longer.
2. Person needs additional awareness and information to remain healthy on this diet.
3. Plant protein is considered to be of lower quality; needs to be combined with other proteins.
4. Dining out opportunities are limited; number of restaurants and fast food places are limited.
5. Strict vegetarian diet may require supplementary vitamin B_{12}.
6. Diet may require larger quantities of food to satisfy the nutrient and caloric requirements.

Name ______________________

Menu Planning

Directions to students:

1. Plan one-day menus consisting of three nutritionally balanced lacto-ovo vegetarian meals to feed a family of four. The family consists of two adults and two teenagers.
   a. List all of the foods to be used, and prepare a shopping list.
   b. Write a menu for each of the three meals.
   c. Locate and describe recipes to be used, and describe the methods for preparation of the foods.

   Optional

   d. Prepare and serve all three meals in your home. Have a parent write a note confirming that you have prepared these meals.

   Evaluate this activity by doing the following:

   (1) Give the cost of the groceries: $ __________

   (2) List the amount of time spent in preparing each meal:

   Breakfast __________

   Lunch __________

   Dinner __________

   Optional

   (3) Describe the reactions of family members to each meal:

   ____

   ____

   ____

   ____

   ____

Sample One-Day Menu
Vegan Vegetarian

Breakfast

One-half cantaloupe
Two slices whole wheat toast
Cooked wheat cereal with strawberries
Herb tea

Lunch

Lentil salad with spinach
Roasted nuts
Whole wheat roll
Fresh fruit cup
Vegetable cocktail juice
Herb tea

Dinner

Meatless walnut loaf
Curried brown rice
Steamed broccoli
Carrot juice
Sliced fresh apple
Herb tea

Sample One-Day Menu
Lacto-Ovo Vegetarian

Breakfast

Cheese and mushroom omelet
Whole wheat toast
Orange juice
Bran cereal and nonfat milk

Lunch

Cottage cheese, fresh fruit, and sunflower seed salad with Romaine lettuce
Whole wheat crackers
Vegetable cocktail juice
Nonfat milk

Dinner

Soybean casserole
Raw spinach salad
Whole wheat roll
Steamed carrots
Fresh strawberries
Nonfat milk

Name ______________________________

Create Your Own Menu

Directions:

1. Select a partner from the class.
2. Read the situation below and complete the tasks in step 3.

   Situation:

   You and a partner have decided to go into business together. You are opening a restaurant that will feature only vegetarian meals. Your menu will include food suitable for a strict vegetarian and for a lacto-ovo vegetarian.
3. You have the following tasks to complete:
   a. Create a name for your restaurant.
   b. Create a logo for your restaurant.
   c. Design a menu (approximate size 11 x 14 in.) (27.9 x 35.6 cm) for your restaurant:
      *(1) List all food items you will serve.
      (2) List prices for each item.
      (3) Collect recipes and attach them to the menu.
      (4) Draw a logo and put the name of the restaurant on the cover of the menu.

*You may want to list items a la carte or show them together in a meal.

Name ______________________

Vegetarian Lunches

Your school cafeteria manager has announced that the cafeteria will offer an optional vegetarian meal once a week for one month. Because your class has studied the vegetarian diet, you have been asked for menu suggestions.

Plan two lacto-ovo vegetarian lunches that could be served in a school cafeteria. Consider a variety of foods and include foods from all four basic food groups in each menu. Remember to follow the school lunch pattern requirements.

Name ______________________

Forced Choices

Very Strong Feeling

1	5	9	13
2	6	10	14
3	7	11	15
4	8	12	16

Could Not Care Less

Name ______________________

People Backpacking Committee Report

To: Members of the Backpacking Club

From: Food Planning Committee

Subject: Upcoming Backpacking Trip

Names ______________

____

____

____

____

Our committee has chosen the following five important food items to be taken on our upcoming week long backpacking trip.

Important Food Items to Be Taken	Reasons for Choosing Food

Our committee chose to take ______________ on our trip because one of our values about backpacking food is ______________.

Our committee also chose to take ______________ because another one of our values about backpacking food is ______________.

Name ______________________

Values About Choosing Foods

My Lunch Order	Cost
1. ______________________	________
2. ______________________	________
3. ______________________	________
4. ______________________	________
5. ______________________	________
Total	________

My Values About Choosing Food

1. ______________________
2. ______________________
3. ______________________

One of my values about selecting a food at a fast food restaurant is as follows:

____

____

____

____

Name ______________________

Opinionnaire on Food

Circle your response.

SD = Sometimes disagree
D = Disagree
A = Agree
SA = Sometimes agree

SD D A SA 1. Children should learn to clean their plates.

SD D A SA 2. I sometimes eat just because I am bored.

SD D A SA 3. I often reward myself with my favorite food when I have accomplished something important.

SD D A SA 4. The adults I know like to see babies who are nice and plump.

SD D A SA 5. When I am with my friends, I often eat the same foods they eat.

SD D A SA 6. I would serve expensive food to my friends at dinner.

SD D A SA 7. Giving a baby something to eat is a good way to keep him or her from crying.

SD D A SA 8. A good way to punish a child is to send him or her to bed without dinner.

SD D A SA 9. When I am at a restaurant with a group of friends, I often wait to see what the others order before I make my selection.

SD D A SA 10. I eat more when I am alone than when I am with others.

SD D A SA 11. Food is given to express love.

SD D A SA 12. When I am unhappy or lonely, I sometimes eat when I am not really hungry.

SD D A SA 13. If I have no one to eat a meal with me, I will usually just snack.

SD D A SA 14. I like to eat.

SD D A SA 15. I eat only when I am hungry.

SD D A SA 16. I really dislike at least one food because my parents made me eat it.

SD D A SA 17. I often feel guilty when I eat.

SD D A SA 18. I love trying new and unusual foods.

SD D A SA 19. I like homemade foods better than foods prepared in a restaurant.

SD D A SA 20. Certain foods are important to me because of my ethnic, religious, or regional background.

SD D A SA 21. The most important consideration in selection of foods is the nutritive value.

Name ______________________

Eating in Social Situations

Directions: Put "yes" or "no" by each comment.

1. I dislike eating______________________, but I would eat it if:

______ My grandmother made it for me.
______ It was disguised and I did not know what it was.
______ It was the only food available when I was hungry.
______ It was served to me at a friend's house.
______ My boyfriend/girlfriend made it especially for me.
______ All my friends were eating it.
______ My family served it for dinner.

2. I dislike eating______________________, but I would eat it if:

______ My grandmother made it for me.
______ It was disguised and I did not know what it was.
______ It was the only food available when I was hungry.
______ It was served to me at a friend's house.
______ My boyfriend/girlfriend made it especially for me.
______ All my friends were eating it.
______ My family served it for dinner.

3. I dislike eating______________________, but I would eat it if:

______ My grandmother made it for me.
______ It was disguised and I did not know what it was.
______ It was the only food available when I was hungry.
______ It was served to me at a friend's house.
______ My boyfriend/girlfriend made it especially for me.
______ All my friends were eating it.
______ My family served it for dinner.

4. I dislike eating______________________, but I would eat it if:

______ My grandmother made it for me.
______ It was disguised and I did not know what it was.
______ It was the only food available when I was hungry
______ It was served to me at a friend's house.
______ My boyfriend/girlfriend made it especially for me.
______ All my friends were eating it.
______ My family served it for dinner.

5. Do you always act the same way? Why or why not?

Name ______________________

Food Diary

Time	Where I was	Who I was with	What I ate	Factors which influenced my eating behavior

Name ______________________

What's Happening Here?

Directions: Answer the following questions.

1. Al is at a friend's house for dinner. His friend's mother serves Al a food he has never seen before. Though he is afraid to eat it, he does anyway. What is happening here?

2. Terry is trying to decide what to eat for lunch. The school lunch menu looks very good, but Terry is uncertain about whether to buy one because her friends always put down school lunches and the people who eat them. Terry decides to buy a hamburger at a local fast food restaurant instead. What is happening here?

3. Bill is taking his girlfriend out to dinner. He does not have too much money but decides to take her to a very expensive restaurant anyway. What is happening here?

What Is Hunger?

What is hunger?

What does it do to people?

What are forces leading to world hunger?

What is being done to solve world hunger?

Definitions

HUNGER

Definition:

Characteristics:

UNDERNUTRITION

Definition:

Characteristics:

MALNUTRITION

Definition:

Diseases:

Characteristics:

Name____________________

World Hunger

Directions: Write definitions for the following:

1. Hunger ____________________

2. Undernutrition occurs when ____________________

   Characteristics associated with undernutrition include ____________________

3. Malnutrition occurs when ____________________

4. Kwashiorkor is ____________________

   It is characterized by ____________________

5. Marasmus is ____________________

   It is characterized by ____________________

6. Factors influencing world hunger and world nutritional problems include (Identify at least four.) ____________________

7. Solutions proposed for the world hunger problems include (Identify at least three.) ____________________

Health and Nutritional Factors

(Excerpts from Article in "Teaching About World Hunger," United States Committee for UNICEF)

"Malnutrition, possibly starvation, now threatens some 500 million children in Asia, Africa, and Latin America."

This statement is most difficult to comprehend, not only in terms of the number, but in terms of what is happening to the minds and bodies of these children.

When looking at world hunger from the viewpoint of health and nutrition, we must realize that the human body makes two basic kinds of demands on its food supply. These two dimensions of hunger can be thought of as quantitative and qualitative demands. Prolonged undernutrition or starvation is the result of a failure to meet the body's quantitative demands for calories or "fuel" to provide the critical level of energy needed to sustain basic life systems.

Malnutrition, on the other hand, is the result of failure to meet the body's qualitative demands for nutrients necessary for growth and good health. Although they are separate and distinct problems of hunger, they are most often found to exist together in areas where food is in short supply.

It has been established that nearly one billion people in this world (one-fourth of the world's population) suffer from undernutrition, the serious overt quantitative deficiency that leads eventually to death by starvation (unless the weakened body is fatally attacked by diseases, many of which may be relatively mild to the well-fed body). Although reliable statistics reflecting the number of people in the world who suffer from some form of malnutrition are not easily available, some authorities suggest it may be nearly two-thirds of the world's population. If we were to include the number of people suffering from obesity and other nutritional problems resulting from *overconsumption* of food, the figures would be even higher.

Remember that caloric intake is a good indicator of general nutritional adequacy, but it is primarily associated with the quantitative dimension of hunger or undernutrition. Protein intake is one of the most important indicators of the qualitative dimension associated with malnutrition. The *average* protein intake in the United States is 96 grams per day, fully double that of the *average* Indian's protein intake of 48 grams per day.

How do these basic differences in consumption of overall calories and protein affect the health and nutrition of the children and adults in the world?

Although there are no absolute figures we can rely on with certainty, experts in this field generally agree on an average range of minimum requirements of calories and protein for human beings. Even these ranges, however, vary with respect to age, size, sex, and environmental factors, such as heat loss in cold climates and evaporation of body fluids in dry climates. A range of 2,300 calories to 2,700 calories daily per person, including an intake of from 40 to 60 grams of protein per day (also depending on the quality of the protein), can be accepted for most purposes. We find that on the average people in the more highly developed countries get 90 grams of protein per day, while in the poorest nations that average is about 40 grams per day. Remember, however, that data stated in averages can hide less obvious data. *If* everyone in the developing nations were to receive at *least* 40 grams of protein per day, there would still be a widespread problem of protein deficiency. But the fact remains that hundreds of millions of people receive far less than the average.

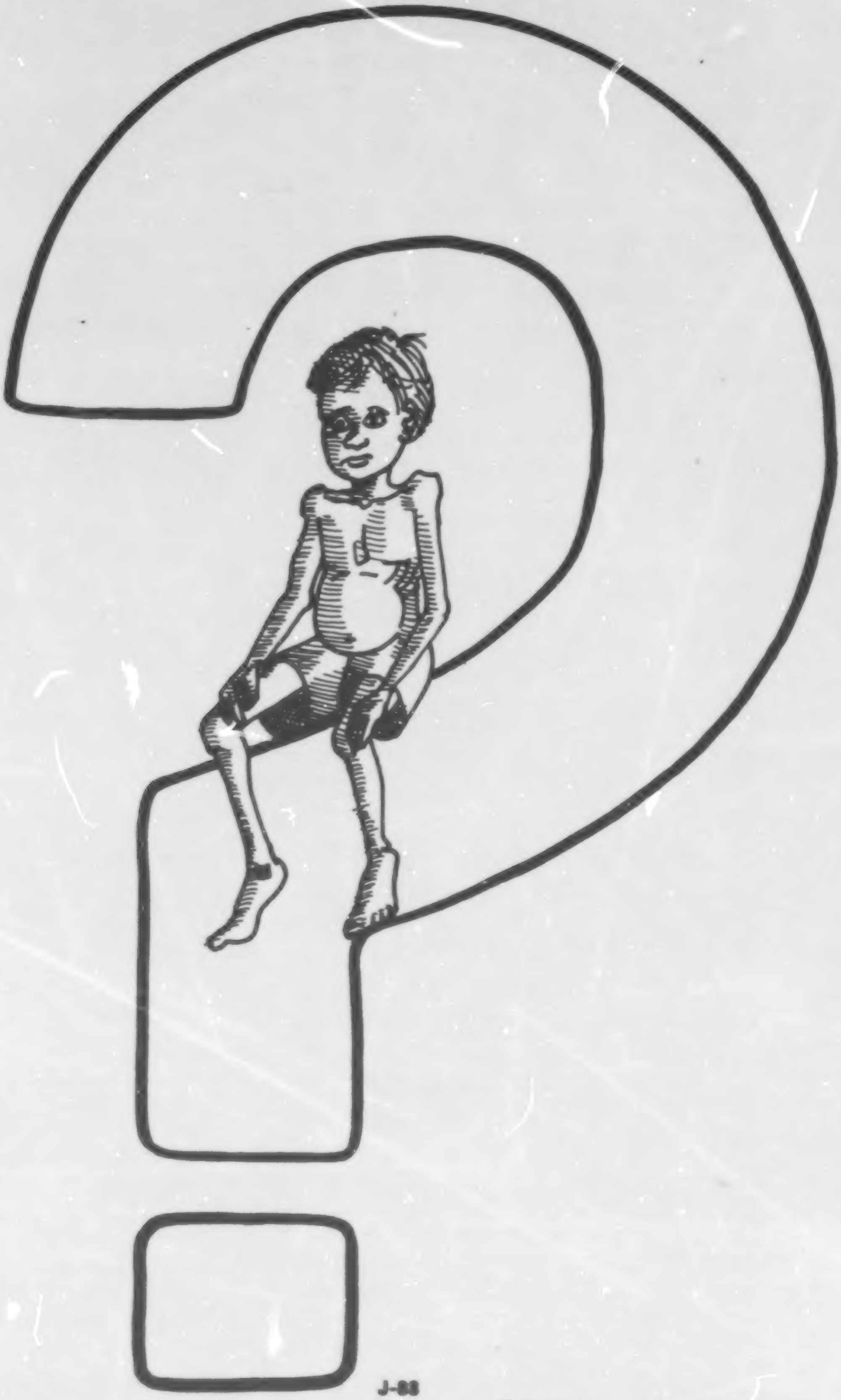
The effects of such undernutrition and malnutrition are many, and taken together they are creating a global crisis of proportions far beyond that conceived just a few years ago. The effects are usually seen first among the children of the world; in any shortage they are the most vulnerable segment of the population. A variety of serious health problems, including goiter, cretinism, certain forms of blindness, anemia, and the classifications of protein-calorie malnutrition (PCM), maramus[1], kwashiorker[2], and the combinations thereof are taking a heavy toll on children, particularly in the poorest 40 to 50 countries of the world. In many areas of these countries, 30 percent of the children die from malnutrition-related causes before they reach their fifth birthday. Too often children who do survive bear the subtle mental and physical scars of malnutrition for their entire lives. Such serious dietary deficiencies that permanently damage and rob children of their opportunity to develop into healthy, mentally alert, and physically capable, productive adults represent far more than an individual or family tragedy. Such individuals constitute an immense drain on national and global resources, since their potential productivity is not absent but a negative factor because hundreds of millions of people become dependent rather than productive.

---

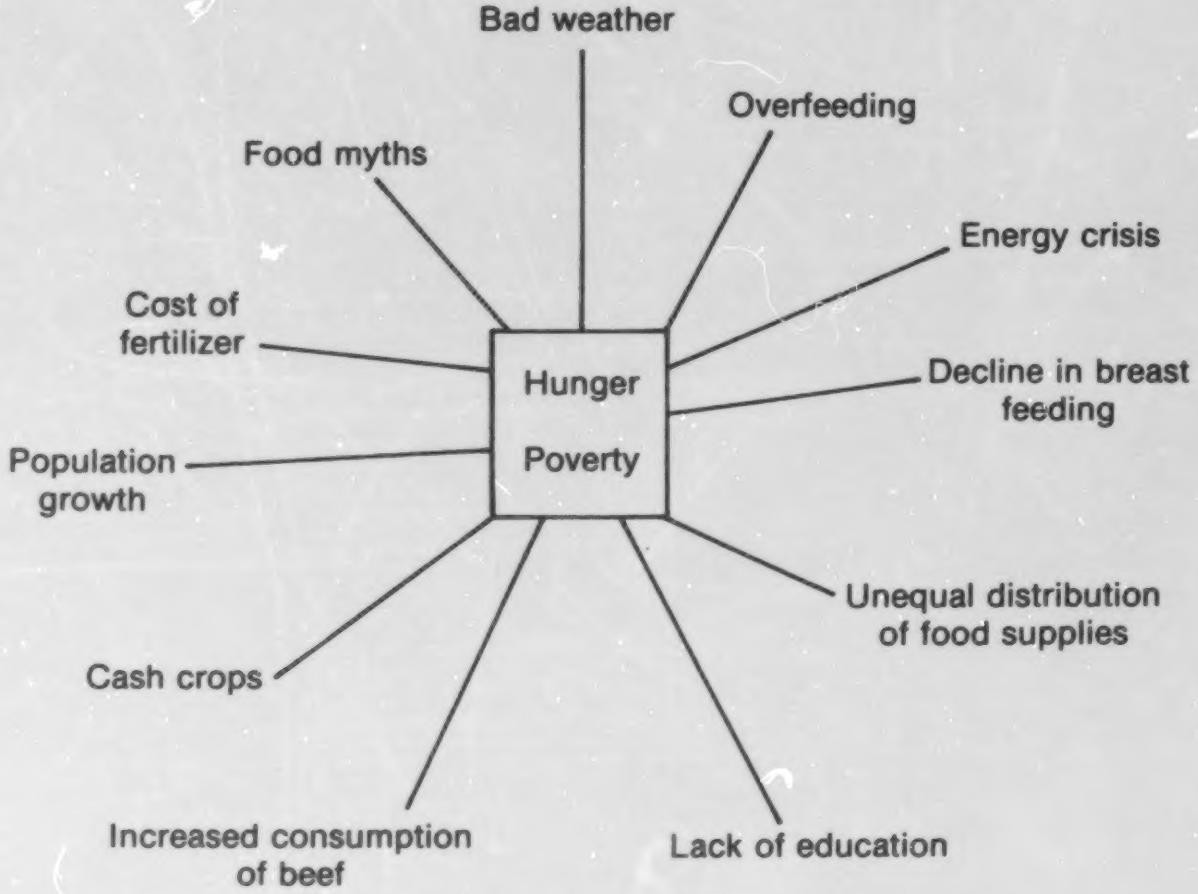
[1] A disease resulting from deprivation of protein and calories to a similar degree, characterized by very low body weight, muscle wasting, and growth retardation.

[2] A disease resulting primarily from a protein deficiency relative to calorie intake, characterized by edema, often accompanied by poor appetite, dark patches on skin, and lightened loose hair. Kwashiorkor may be superimposed upon any degree of marasmus and is commonly precipitated by infection.

Question Mark



Model: Forces Affecting World Hunger/Poverty

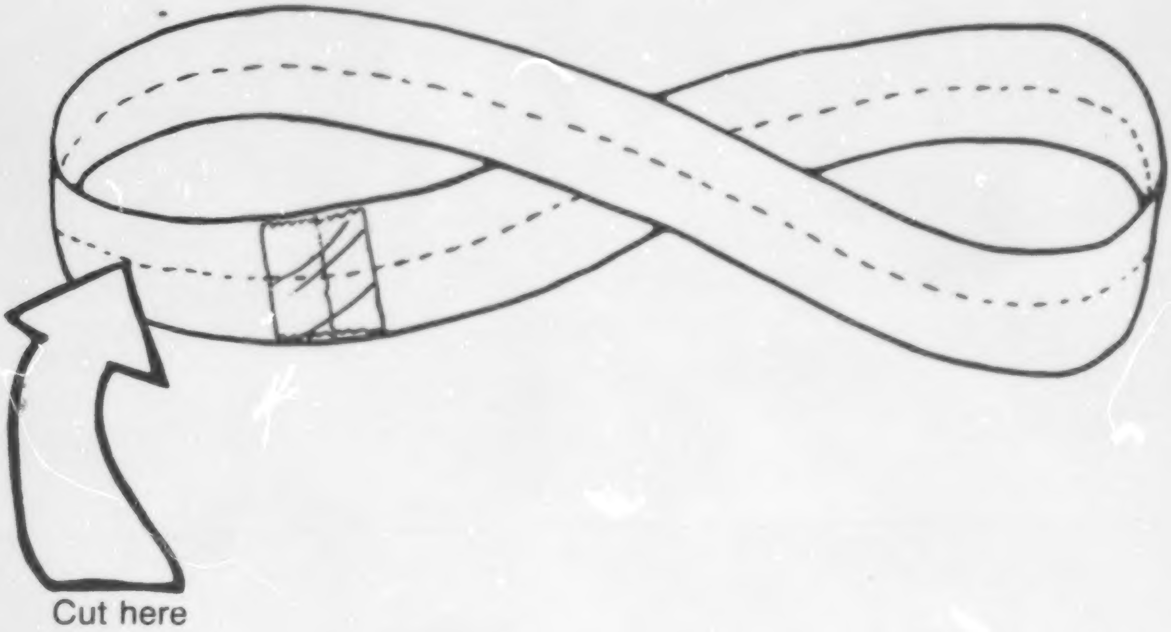

Bad weather
Overfeeding
Food myths
Energy crisis
Cost of fertilizer
Hunger
Poverty
Decline in breast feeding
Population growth
Unequal distribution of food supplies
Cash crops
Increased consumption of beef
Lack of education

Reprinted with permission from Kaatz, K., and M. Goodwin. "Web Chart on World Hunger," in *Food: Where Nutrition, Politics and Culture Meet*. Washington, D.C.: Center for Science in the Public Interest, © 1976.

Infinity Ring (Mobius Strip)

Cut paper into a strip 8 inches long by 1 inch wide (20.3 centimetres long by 2.5 centimetres wide).

Twist one end of the strip 180 degrees through its longitudinal axis (a figure eight will be formed) and attach both ends with tape. Then cut the strip lengthwise in the middle. Two interlocking circles will appear.



Name ______________________

Protein Potentials Ladder

Develop new strains of grains that have more protein content. *(RESEARCH)**

Contribute money to agencies that help provide food for needy countries. *(MONEY)*

Send food to countries that have malnutrition. *(SEND FOOD)*

Provide training programs for people to learn skills to improve agriculture. *(EDUCATION)*

Provide help to control population growth. *(POPULATION)*

People in rich countries obtain more of their protein from plant food. *(LESS MEAT)*

Send farm equipment and supplies to needy countries. *(EQUIPMENT)*

Sell cattle, chickens, grains, and other foods to developing nations. *(SELL FOOD)*

Develop unused land in nations where food is scarce. *(USE LAND)*

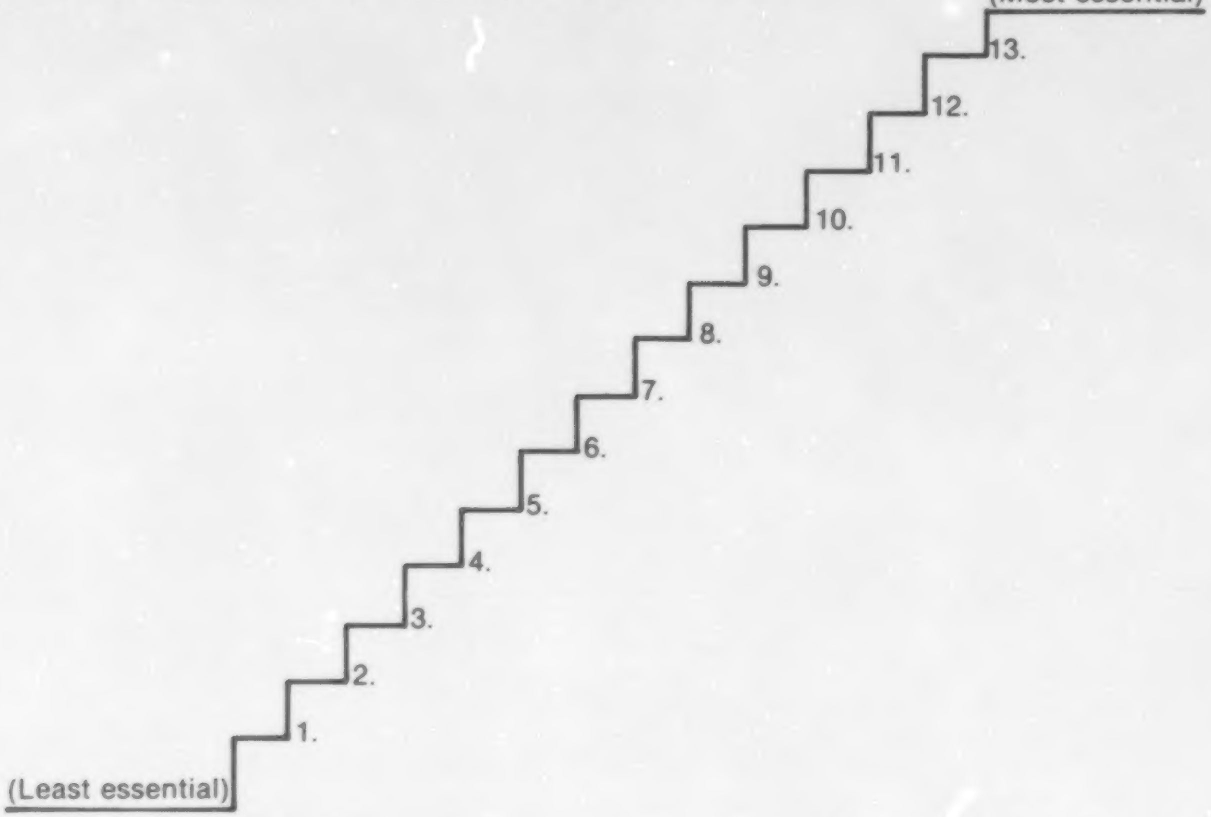
Increase use of soy products to make meat substitutes. *(MEAT ANALOGS)*

Add nutrients to existing food to increase nutritive value. *(FORTIFY)*

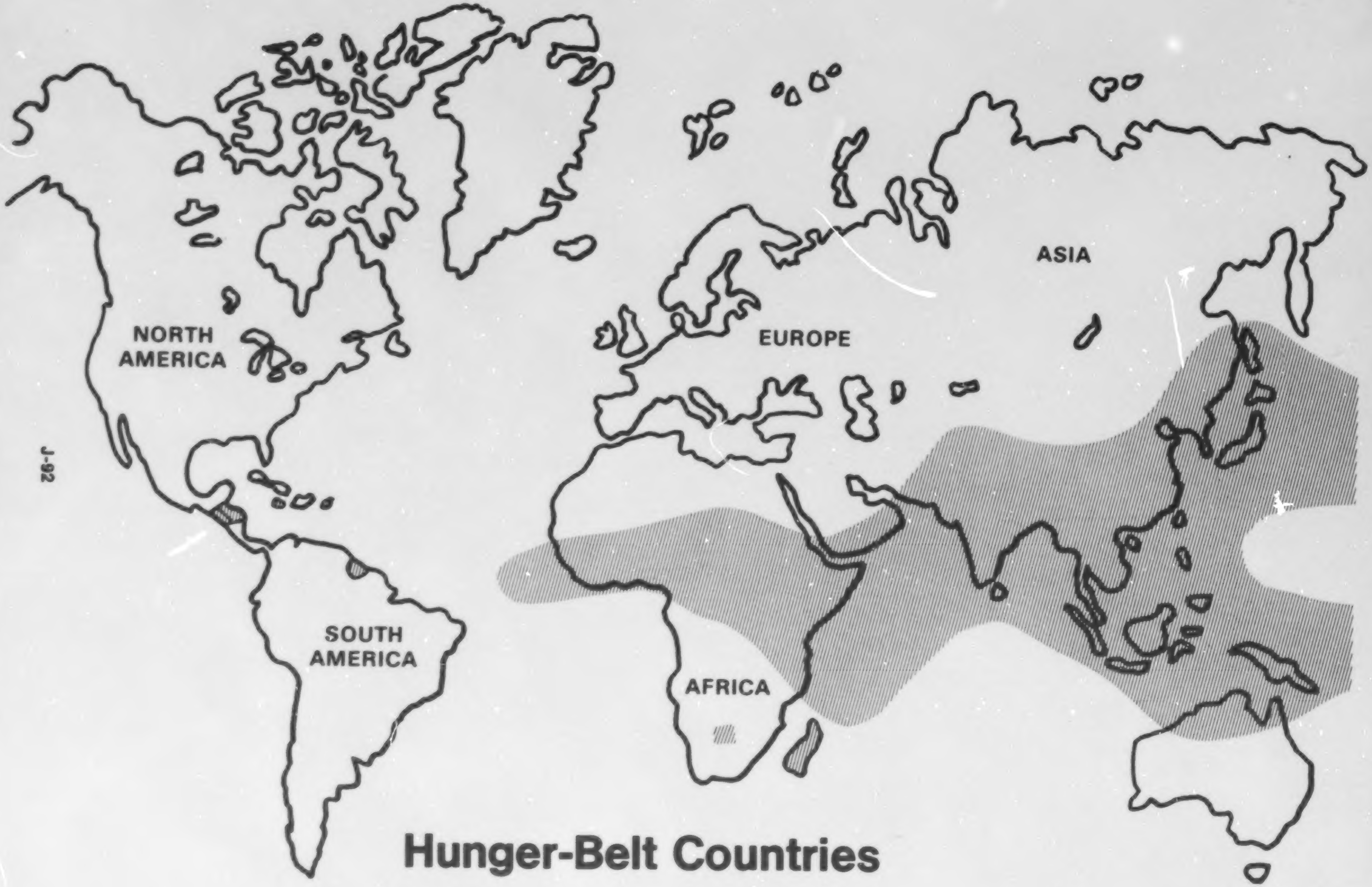
Provide help to increase economy of developing countries. *(ECONOMIC AID)*

Redistribute land ownership in countries so more people own and can work the land. *(LAND OWNERSHIP)*

*(KEY WORD)—Place these words on the steps of the ladder.



Reprinted with permission from *Protein Power.* Boston: Massachusetts Department of Education, Bureau of Nutrition, Education, and School Service. © 1981.


NORTH AMERICA
SOUTH AMERICA
EUROPE
AFRICA
ASIA
J-92

Hunger-Belt Countries

Key Nutrients Chart

Key nutrients	Important functions	Important sources	An insufficient amount may cause
Proteins	Promote growth. Build and repair all tissues in the body. Help build blood cells and the antibodies that fight infection. Supply energy.	Meat, fish, poultry Eggs Milk and cheese Dried peas and beans Peanut butter Nuts Cereals and breads	Poor muscle tone and posture. Poor resistance to disease. Growth retardation if protein deficiency severe and calorie intake more than adequate. Severe protein deficiency disease, *Kwashiorkor,* in children. Disease can be fatal. The child is more susceptible than normal children to the effects of infections and may die from a bout of measles, diarrhea, or other infection. *Kwashiorkor* is rare in the United States. Unfortunately, it is common in many developing countries.
Carbohydrates (Sugars and starches)	Supply energy.	Breads and cereals Potatoes, lima beans, corn Dried peas and beans Bananas, dried fruits, sweetened fruits Smaller amounts in other fresh fruits Sugar, honey, jelly, jam	Carbohydrates and fats, major sources of calories. Too few calories may lead to weight loss, fatigue, and general lack of energy. A severe case of caloric deficiency results in *marasmus.* The symptoms of marasmus include thinness and wasting of tissue. If a person is deprived of calories long enough, he or she will starve. Caloric deficiencies are not common in the United States. Far more Americans suffer from the effects of too many calories—obesity.
Fats	Supply large amount of energy in small amount of food. Supply essential fatty acids. Carry fat-soluble vitamins, A, D, E, K.	Butter and margarine Cream Salad oils and dressings Cooking and table fats Fat and meat	Failure to thrive in infants if on a fat-free diet. Skin conditions resulting from too little fat in diet. Linoleic acid is an essential fatty acid for humans and must be supplied in the fat eaten—very difficult to be on a fat-free diet unless on a prepared formula such as infant formula or special tube feeding formula.
Vitamin A	Help keep skin clear and smooth. Help keep mucous membranes firm and resistant to infection. Help control bone growth. Help protect against night blindness and promote healthy eyes.	Yellow, orange, and dark green leafy vegetables Butter, whole milk, cheddar-type cheese, ice cream Vitamin A fortified margarine Animal fats Liver Eggs	Weakened respiratory system. Increased susceptibility to infection. Dry eyelids and reddened eyes. Extreme deficiency causes skin changes, *night blindness,* thickening of the cornea and eventual blindness. Vitamin A is one of the most often neglected nutrients in the American diet.

Key nutrients	Important functions	Important sources	An insufficient amount may cause
B vitamins Thiamin (Vitamin B_1)	Keep appetite and digestion normal. Helps keep nervous system healthy and prevents irritability. Help body release energy from food. Help body utilize other nutrients, especially carbohydrates.	Meat, fish, poultry (Pork supplies three times as much as other meats.) Eggs Enriched and whole-grain breads and cereals Nuts, dried peas, and beans White potatoes	Nervousness and irritability Poor appetite and digestion Unusual fatigue Severe deficiency results in beriberi (numbness in arms and legs, gastro-intestinal upsets, muscle degeneration, heart problems)
Riboflavin (Vitamin B_2)	Help cells use oxygen and release energy from food. Help keep vision clear. Help keep eyes, skin, tongue, digestive tract in healthy condition. Prevent scaly, greasy skin around mouth and nose.	Enriched or whole-grain breads and cereals Milk, ice cream, cheese Meat, especially liver Fish, poultry, eggs	Reddening of the eyes Light sensitivity Blurring of vision Scaly skin around mouth and nose Cracked skin at corners of mouth
Niacin (Vitamin B_3)	Help keep nervous system healthy. Help keep skin, mouth, tongue, digestive tract in healthy condition. Help cells use other nutrients, especially protein and fat.	Enriched or whole-grain breads and cereals Poultry, meats, and fish Peanuts, peanut butter The amino acid tryptophan (present in many protein-rich foods) partially converted to niacin in the body	Nervousness and depression Inflamed skin Digestive disorders Severe deficiency results in *pellagra* (muscle weakness, diarrhea, skin sores, loss of appetite, mental derangement, dermatitis—can lead to death)
Vitamin C (Ascorbic Acid)	Help make cementing materials that hold body cells together. Help make walls of blood vessels firm. Help body resist infection. Help in healing wounds and broken bones.	Citrus fruits (oranges, grapefruit, lemons, limes and tangerines) Tomatoes Strawberries Cantaloupe Green or red peppers Broccoli Raw or lightly cooked greens and cabbage White potatoes	Sore, bleeding gums Small hemorrhages under the skin Tenderness in joints and limbs Loss of appetite Possible internal hemorrhages Severe deficiency results in *scurvy* (more serious combination of the above symptoms leading to death)

An Eskimo Family

All day long the wife is busy scraping skins or softening them by chewing for the manufacture of boots. Or she is sewing fur clothing, tent covers of skins, or kayak covers. Between the tides she must collect seaweed and clams and perhaps char, a delectable Arctic sea trout. She may prepare one warm meal a day, normally seal meat, which she cooks in a pot over the slow flickering flames of a seal oil lamp. This meat is eaten with the cooking water as soup, with seaweed and sea water serving as seasoning. After this one meal, the family will nibble for the rest of the day. There may be a piece of muktuk, char, or a shank of half-frozen caribou meat, all raw.

Now it is the mid-1960s. The family has moved to the construction site of a defense installation and airstrip. The husband and son have found work there. They eat three meals a day in the cafeteria. The richness of those meals shows in the bulging paunches. They live in a shack, which they constructed themselves; but later they will move into a three-bedroom house with oil heat and electricity, built with a hefty bit of government help.

Government-sponsored stores, or those of the Hudson's Bay Company, sell them clothes and food. The women while away their idle hours chewing chocolates instead of animal skins, attending movie shows, and drinking cokes and other sugared soft drinks. There is little else for them to do. They no longer need to sew and make clothes or scrounge for food. The flavor of communal life of a nomad family no longer exists, so there is little to gossip about.

And the chewing of meat—even more so of bones—which used to be an invaluable source of minerals, particularly for the pregnant or lactating mother, has become painful or impossible due to the Eskimo's rapidly rotting teeth.

Of course, not all Eskimo families have been subject to such changes of activity, housing, and above all, nutrition, but it is a fact of life for most of them.

Note: Muktuk is the raw skin of a white whale or narwhal (rich in vitamin C).

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Name ______________________

Identification of Influencing Factors

	Amount of influence in selection of food		
	Often	*Once in a while*	*Never*
1. I compare the cost of food with its nutritional content.			
2. I compare name brands with store brands to see if I can save money on certain items.			
3. I encourage my parents to save money on some food items by cutting out coupons (mail, newspapers, magazines) and taking them to the market for discounts.			
4. I would buy a particular food because it is more convenient to prepare than others.			
5. I have been given special foods by my parents because of something I accomplished.			
6. When I was younger, my parents gave me special foods (ice cream, candy) as a bribe.			
7. When I am under pressure at school or home or feel bad about something, I eat certain types of food.			
8. When I am under pressure at home or school or feel bad about something, I eat more food than when I feel good about myself.			
9. I associate some foods with the expression of love.			
10. Some foods I eat remind me of unpleasant experiences from the past.			
11. Some foods I eat remind me of pleasant experiences from the past.			
12. I would buy a particular food because it is convenient for storage and has a long shelf life.			
13. I would buy a particular food just because it tastes good.			
14. When I feel sad or bad about something, I cannot eat at all.			

Name ______________________

Help Wanted: Food-Related Careers

1. Which career requires a bachelor's degree if the applicant does not have satisfactory work experience?

____

2. Name other careers which require a bachelor's degree.

a. ______________ d. ______________

b. ______________ e. ______________

c. ______________

3. What training or education beyond a bachelor's degree is required or preferred for the following careers?

a. Clinical Dietitian ______________

b. Home Economics Teacher ______________

c. Research Nutritionist ______________

4. For which career must an applicant have a high school diploma plus an Associate in Arts degree from a community college?

____

____

5. Which careers do not require a high school diploma?

a. ______________ b. ______________

6. Which food-related careers would you like to learn more about?

____

____

7. What are the reasons for your interest in these careers?

____

____

____

____

Want Ads

Direction: Read the following ads, which tell about some food-related careers. Refer back to the ads to answer the questions on the "Help Wanted: Food-Related Careers" work sheet.

Clinical Dietitian

- Evaluate nutritional adequacy of hospital menus.
- Plan diets.
- Supervise preparation and service of meals.

R.D. required (Bachelor's degree and clinical work experience as part of four-year program or as additional internship)

Also needed
Dietetic Technician

Assist Dietitian in meal planning and supervision

A.A. degree
required

Send resume to Sunnycrest Hospital.

Cooks

Now being hired by the Wilson School District

Training: High school or post-high school food service training desirable.

Advancement opportunities available in our food service division for people interested in acquiring additional training.

Do you have . . .

- A bachelor's degree in food science, chemistry, biology, or other life science?
- A desire to investigate the nature of food?
- An interest in developing new food products, packaging, and methods of storage and preservation? Yes?

Wheatco Products is now hiring food scientists/technologists.

Food Inspectors Needed!

Inspect Food
Products
for

- Contamination
- Proper labeling and handling

People with a bachelor's degree or three years of work experience are eligible to take the qualifying exam in consumer safety.

Apply to the U.S. Food and Drug Administration

Home Economics Teachers:

The Anderson High School District has two immediate openings. Applicants must have a bachelor's degree and teaching credential.

P.O. Box 6149

* * * * *

Home Economists:
KTLA Radio

Needs qualified person with a bachelor's degree in home economics to compare food product quality and prices for new program on consumer education.

* * * * * * * * * * *

Homemaker-Home Health Aide
(Call 419-3200)

Work in Private Home Caring for Convalescing Patients.

Duties: Cleaning house, planning and preparing meals, and shopping for food, other personal services.

Requirements: High school diploma is not required, but preference is given to applicants with high school home economics courses or nurse's aide training.

* * * * * * * * * * *

Curious? Capable of Conducting Scientific Research?

Research Nutritionist Needed

To conduct research on nutritional intake as a basis of cancer.

MUST HAVE BACHELOR'S DEGREE.
DOCTORAL DEGREE PREFERRED.

Call University of West Farland.

Name ______________________

Job Applicant Activity Sheet

Applicants

1. Mark Ramirez: "I am very interested in helping consumers get their money's worth. In fact, I have had over three years experience visiting canning companies to see if they are following proper health, labeling, and handling procedures."

   Job ______________________

2. Janet Edwards: "I have received a bachelor's degree in food and nutrition and have just completed a nine-month dietetic internship. I enjoy working with and helping people and would also like to do food research."

   Job ______________________

3. Bill Rogers: "I am very concerned about the lack of consumer knowledge and the ways in which it can cost people money as well as affect their health. I feel my bachelor's degree in home economics qualifies me to accept a position in which I could inform consumers of the various food products and help them make wise selections."

   Job ______________________

4. Phyllis Chan: "I have always loved discovering new information. I guess that's why I went on and got my doctorate in nutrition. I would like to use my knowledge to help people."

   Job ______________________

5. Susan Anderson: "I just got my bachelor's degree in chemistry. I am fascinated by modern developments in food research and would like to take part in the development of new products."

   Job ______________________

6. Joseph Bond: "I am going to high school at night and need a daytime job. I have taken two high school courses in home economics and was a baker in a high school occupational program in which the students operated a restaurant on campus."

   Job ______________________

7. Barbara Madison: "I love kids and would like to use my knowledge to help them. I have a bachelor's degree in home economics and a teaching credential."

   Job ______________________

8. Scott Forster: "I like learning about food and nutrition. In fact, that is what I studied for two years at the community college."

   Job ______________________

9. Anne Johnson: "I have been out of high school for ten years now. Before my children were born, I worked as a nurse's aide for a year. Now I would like to get a full-time job again."

   Job ______________________

Occupations and Careers Related to Food Service and Nutrition

Advertising Copywriter
Agricultural Engineer
Agricultural Extension Service Worker
Airline Food Service Supervisor
Animal Nutritionist
Armed Services Dietitian
Baker
Bartender
Beverage Worker
Busboy or Busgirl
Botanist
Butcher
Cafeteria Counter Attendent
Cafeteria Manager or Assistant Manager
Cafeteria Supervisor
Cake Decorator
Cashier
Caterer
Caterer's Assistant
Chef or Cook
Club Dining Director
Community Aid Economist
Concessionaire
Consumer Advocate
Consumer-Business Liaison
Consumer Consultant
Conservationist
Cooking School Owner
Cooperative Extension Food Specialist
Diet Counselor
Diet Counselor for Out-Patients
Dietitian
Dining Room Hostess
Director of Recipe Development
Economist
Farmer
Farm Machinery Manufacturer and Salesperson
Food Broker
Food Buyer
Food Checker
Food Chemist
Food Editor
Food Inspector
Food Photographer
Food Production Manager
Food Service Director
Free-Lance Writer or Consultant
Gourmet Cookware Shop Owner
Grocery Store or Specialty Food Store Owner
Horticulturist
Kitchen Helper
Maitre d' of a Hotel
Management Personnel
Marketing Specialist
Meals-on-Wheels Director (preparing ready-to-serve meals for special orders; especially popular with elderly people, party hostesses, and bachelors)
Mechanic
Menu Planner
Merchandising Director
Nutrition Consultant
Nutritionist
Nutrition Researcher
Oceanographer
Pastry Supervisor
Pastry Chef or Baker
Peace Corps or VISTA Volunteer
Personnel Director
Private Baker (for special occasions)
Public Health Nutritionist
Publicity Director for a Food Company
Public Utilities Home Economist
Purchasing Agent
Radio or Television Program Host or Hostess (Food-related program)
Restaurant Chain Executive
Restaurant Manager or Assistant Manager
Restaurant Owner
Sandwich Maker
Sanitation Worker
School Lunch Consultant
Short-Order Cook
Soda Fountain Worker
Soil Scientist
Space Food Technologist
Storeroom Supervisor
Teacher
Test Kitchen Home Economist
Traffic Engineer (transportation of food)
Vending Attendant
Vending Service Concessionaire
Vending Route Man
Waiter or Waitress

Name ____________________

Career Work Sheet

The career I researched is ______________________________.

Answer the following questions about this career:

1. How many years of education does this career require?

____

2. What is the basic expense of education?

____

3. What is the beginning gross income?

____

4. What are the general benefits (health, dental, vision, and so on)?

____

5. What are the work hours per day?

____

6. Are there any extra demands in time, such as travel or homework?

____

7. What is the average net income?

____

8. Is any extra expense involved to continue development?

____

9. What is the monthly income?

____

10. What gross income could be expected after 20 years?

____

11. What are the rewards or benefits other than monetary?

____

References for Food-Related Careers

Students interested in learning more about additional opportunties in food-related careers may write to the following organizations:

Nutrition and Food Service

American Dietetic Association
430 North Michigan Avenue, 10th Floor
Chicago, IL 60611

American School Food Service Association
4101 East Iliff
Denver, CO 80222

Society for Nutrition Education
1736 Franklin Street
Oakland, CA 94612

American Home Economics Association
2010 Massachusetts Avenue, NW
Washington, DC 20036

Food Technology

Institute of Food Technologists
221 North La Salle Street, Suite 2120
Chicago, IL 60601

Consumer Safety

Interagency Board of U.S. Civil Service
Examiners for Washington, D.C.
1900 E Street, NW
Washington, DC 20415

In addition, students should check the following sources of career information:

Dictionary of Occupational Titles. Washington, D.C.: U.S. Department of Labor, 1977. Lists detailed job descriptions of over 20,000 jobs.

Hopke, William E., *Encyclopedia of Careers and Vocational Guidance.* Chicago: J. G. Ferguson Publishing Co., 1972, Vols. I and II.

Occupational Outlook Handbook, 1984-1985 Edition. Washington, D.C.: U.S. Department of Labor, 1984. Provides the following information on many jobs included in the *Dictionary of Occupational Titles:* Nature of the work; places of employment; training and other qualifications; advancement opportunities; employment outlook; earnings and working conditions; and additional information.

Government Careers

1. The purpose of this assignment is to learn more about city, county, state, and federal government by studying jobs in nutrition, food technology, food safety, and consumerism within each governmental body.

2. For the purposes of this assignment, the class will be divided into eight groups. Each group will study one of the following systems:

Federal	Political employment, elective or appointive
	Civil service employment
State	Political employment, elective or appointive
	Civil service employment
County	Political employment, elective or appointive
	Civil service employment
City	Political employment, elective or appointive
	Civil service employment

3. Each group will be responsible for the following:
   a. A general overview of one of the eight systems used above. This may be in the form of a line-organization chart or written description.
      (1) Topics to cover:
         (a) What sort of services does this system provide?
         (b) What are some of the major divisions or agencies within the system, and what do they do?
         (c) Is the system logically organized?
         (d) Who is the boss?
         (e) In what job areas(s) do most employees work?
         (f) What are some jobs currently available in this system locally or nationally?
   b. Each member of the group will prepare an in-depth study of one job within the system that deals with nutrition, food technology, consumerism, and food safety.
      (1) Topics to cover:
         (a) A description of the job, including overall responsibilities and day-to-day routine
         (b) The training or preparation needed for the job
         (c) The demand for the occupation
         (d) Salary (approximately)

    - (e) How the job fits into the overall system
    - (f) What skills are needed for the job
    - (g) Personal reactions

c. Each group will make a class presentation on the system and the jobs within the system.

Comments: You are encouraged to be both analytical and critical. Greater emphasis will be placed on your analysis of the information that you gather than on the information itself.

Your presentation may be in any form that you wish—panel discussion, debate, whatever. You may use media or charts to get your point across. Try to keep your sense of humor!

Possible resources to assist you:

(1) Class textbook
(2) Library
(3) Career center
(4) People (possibly the best resource)
(5) Telephone:

Federal Job Information Center, San Francisco; 415-556-6667
State Personnel Board, Sacramento; 916-322-2530
County Personnel Board: Check the local directory.
City Personnel Department: Check the local directory.

The above departments also have job hotlines and list department and agency telephone numbers at the front of the telephone book. Do the following:

(1) Pick up the telephone!
(2) Talk to people that you know who work in government.
(3) Arrange [illegible] interview someone.

Also, be sure to divide equitably group responsibilities, and share information with each other. You may uncover something that your partners need to know.

Name ____________________

Who Gets the Job?

As an employee of a large employment agency, your task for the day is to hire people to fill the nine positions listed. Under the title of each position are listed three applicants and their qualifications. Place a check next to the name of the person you feel is best qualified for the position.

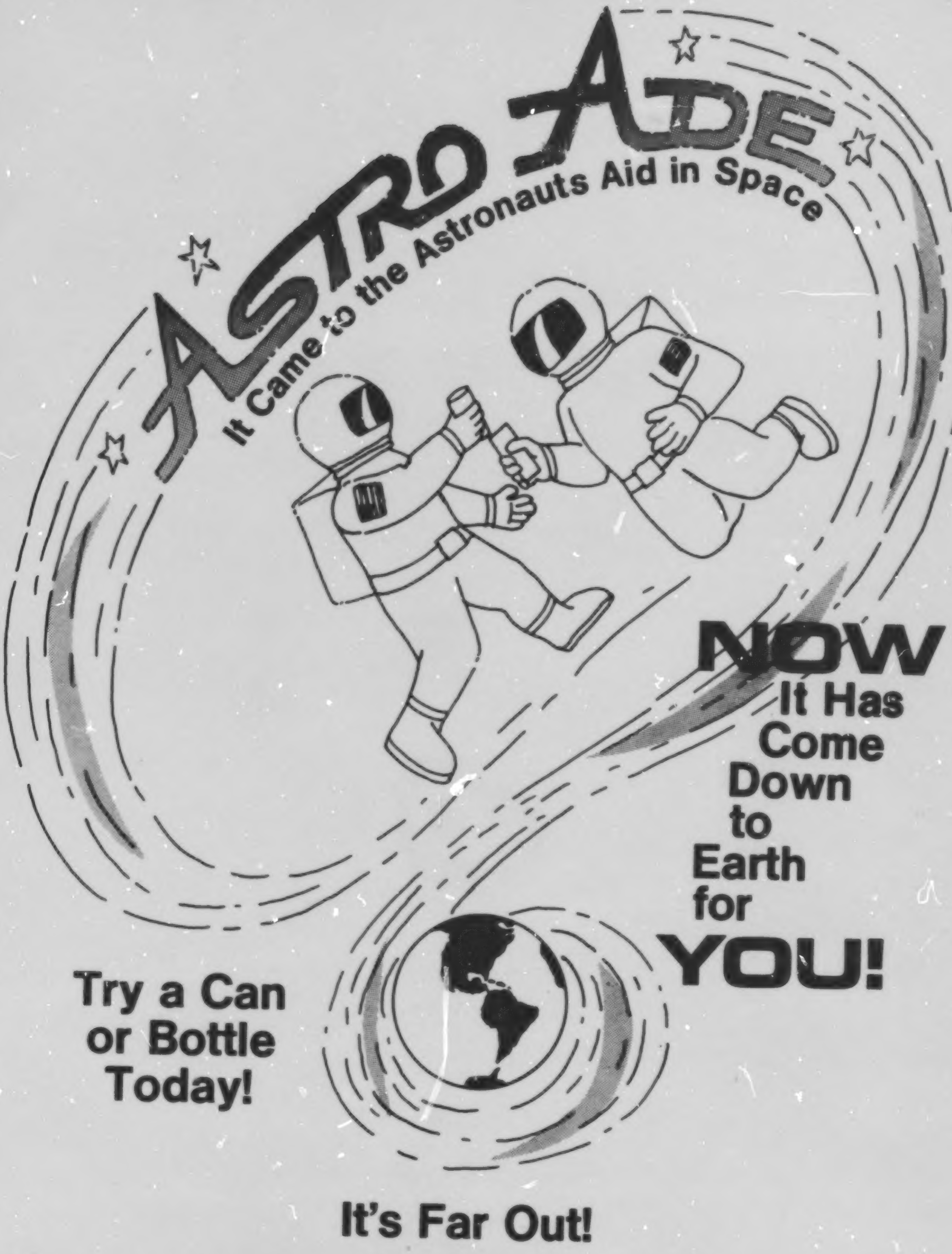
1. Research Nutritionist
    _____ a. J. R. Thompson: Bachelor's degree in chemistry
    _____ b. Susan Murphy: Master's degree in nutrition
    _____ c. Bill Watson: Bachelor's degree in home economics
2. Cook
    _____ a. Amelia Rogers: High school experience as a cafeteria helper
    _____ b. John Johnson: High school diploma with a business major
    _____ c. Laury Mills: High school work experience as a cook
3. Food Scientist/Technologist
    _____ a. Joseph Amherst: Bachelor's degree in biology
    _____ b. Sara Posner: Bachelor's degree in geology
    _____ c. John S. Hills: Bachelor's degree in English
4. Dietetic Technician
    _____ a. Darlene Croft: Bachelor's degree in biology
    _____ b. Sandra Gonzalez: Associate of Arts degree in nutrition
    _____ c. Barry Ho: High school diploma with a science major
5. Home Economist
    _____ a. John Perez: Bachelor's degree in home economics
    _____ b. Ella Lee: Master's degree in chemistry
    _____ c. Stanley Stroller: Doctorate in biology
6. Food Inspector
    _____ a. Sylvia Uchiyama: Bachelor's degree in nutrition
    _____ b. Margaret Weller: One year of work experience in food inspection
    _____ c. Sidney James: High school diploma with a science major
7. Homemaker-Home Health Aide
    _____ a. Lee Sansen: High school courses in foods and consumer economics; nurse's aide training
    _____ b. Marsha Oleson: High school diploma
    _____ c. Tom Carlton: High school courses in industrial arts
8. Home Economics Teacher (High School)
    _____ a. Sara Jones: Master's degree in home economics

_____ b. Mary Eliason: Bachelor's degree in home economics; teaching credential
_____ c. John Jackson: Bachelor's degree in English; teaching credential

9. Clinical Dietitian
_____ a. Julia Menan: Master's degree in biology
_____ b. Edward Gallardo: Bachelor's degree in nutrition
_____ c. George Wier: Bachelor's degree in food and nutrition; internship

Careers with Nutrition Know-How

Field	Definition
Medicine	
Physician	A professional who is trained to evaluate, diagnose, and treat patients with diseases and disorders and to provide advice in the prevention of diseases and disorders.
Dentist	A doctor who examines the teeth and mouth, diagnoses and treats diseases, and may offer dental care and nutritional counseling to his or her patients.
Dental Hygienist	A professional who works under the supervision of a dentist. Duties include cleaning patients' teeth, offering patients instruction in dental care dealing with diet, nutrition, and proper brushing techniques, and taking x-rays.
Registered Nurse	A professional who is trained to care for patients and assist in prevention and treatment of diseases and disorders.
Biologist	A scientist who studies plant and animal life and who may conduct research to determine effects of environmental factors on specific plants and animals.
Food Service	
Food Scientist/Technologist	A scientist who studies the chemical, physical, and biological characteristics of food and who uses this knowledge to develop methods of food processing, preservation, packaging, and distribution.
Social Services	
Agriculture Science Extension Agent	A professional who uses a knowledge of agricultural science and nutrition to educate farmers about proper animal feed requirements, recognition, prevention, treatment of health hazards, and marketing or agricultural products.
Home Economist	A worker with a broad knowledge of various homemaking skills such as consumer economics, nutrition and meal planning, and home management who seeks to improve the quality of family life by conducting research and/or instructing others. Home economists may teach in schools or for public or private agencies.
Homemaker-Home Health Aide	A worker who works in private homes to provide cleaning, homemaking, and personal services for people who are unable to perform them for themselves because of illness or injury.
Food Services	
School Food Service Coordinator	A worker who plans meals and orders supplies necessary for food services in a school cafeteria or several school districts and who coordinates the activities of workers involved in the preparation and serving of food.


ASTRO ADE
It Came to the Astronauts Aid in Space
NOW
It Has
Come
Down
to
Earth
for
YOU!
Try a Can
or Bottle
Today!
It's Far Out!

Name ____________________

Nutrition Know-How to the Rescue!

A. Listed below are five situations involving problems that require someone with a certain amount of nutrition knowledge to solve. Each problem could be solved by one of six workers. These workers are in several different fields, but all of them have knowledge of nutrition, which they frequently apply in carrying out their jobs. The job titles of these workers and their areas of study are:

Food Scientist/Technologist (Food Science)
Dental Hygienist (Medicine)
Home Economist (Social Service)
Agriculture Science Extension Agent (Social Service)
Biologist (Biology)
Homemaker-Home Health Aide (Social Service)

Your task is to read each situation and determine which of the above workers would be most likely to solve the problem. Write the person's job title on the appropriate line.

Refer to your list of "Careers with Nutrition Know-How," which contains brief job descriptions that can help you. The situations are as follows:

1. Members of the Waist Always Diet Club are becoming bored. Most of them have successfully followed their diets for several months, but they are getting tired of eating the same foods. At the last meeting it was discovered that the members lacked creativity in planning their meals and were unimaginative in preparing the foods they eat. Which of the six workers is the president most likely to ask to speak to the club members at their next meeting?

   ____

2. A consumer action group is concerned about the possible contamination of food supplies due to the use of pesticides on vegetables and fruits. They would like evidence on the nutritional effect on life matter of such pesticides and are willing to spend a large amount of money to conduct scientific research. Which of the six workers would be the one most likely to conduct that research?

   ____

3. Susie's visit to the dentist is Tuesday, and she is scared. She knows she has some cavities. She cannot understand why, since she brushes so regularly. "Oh, well," she thinks to herself, while nibbling on her third candy bar for the day, "I guess I have inherited bad teeth." Which of the six workers would be the one most likely to give Susie the information she needs to improve her dental care?

   ____

4. Legislators have been increasingly concerned about the health and safety of California residents should a large earthquake strike. They have formed a special committee to develop emergency plans that could be implemented in case of such a disaster. One recommendation the committee has made is that work begin immediately to develop a new line of complete meals of compressed foods that are economic, nutritious, and appetizing, can be easily stored and distributed, and can be kept for at least a year

without deterioration. Which of the six workers would the committee be most likely to employ to develop the product it desires?

____

5. Mr. and Mrs. Wilson decided that they had had enough of city life. With their five children they bought a small dairy farm. After a year of living on the farm, however, they realized they were having serious problems. Though they were hard, willing workers, their cows did not seem to produce enough milk. Which of the five workers could inform the Wilsons of the proper feed to give their cows to produce more milk?

____

6. Elsie Jones is an eighty-three-year-old widow. She has just returned from the hospital, where she had surgery. She will have to remain in bed for at least a month. During that time she will need someone to clean the house, assist her in bathing, and plan and prepare her meals. Which of the six workers would be the one most likely to care for Mrs. Jones?

____

B. Now you know the job titles of the workers who could solve the above problems. In solving these problems, the workers could apply the knowledge of nutrition listed below. Can you now match the worker with the specific knowledge used in solving the problem? Match the various items of nutrition knowledge below with situations 1 through 6 above.

1. Knowledge of human nutritional needs and the variety of foods which supply these needs, as well as appetizing and attractive ways to prepare these foods

2. Knowledge of the chemical, physical, and biological nature of foods and the ways in which this information can be applied to solving practical problems, such as the development, packaging, and preservation of foods

3. Knowledge of the development, functions, and other characteristics of animal and plant life; and the ability to conduct scientific research

4. Knowledge of nutrients needed by animals in order to be high-quality, high-yield producers of food

5. Knowledge of the diet necessary to maintain general health as well as the health of specific parts of the body

6. Knowledge of nutritious meal planning and preparation and the ability to perform housekeeping chores

Name ______________________

Dear Nutrition Know-It-All

Listed below are six letters which have no answers. Your task is to write on the line after the letter the job title of a person you believe could solve the nutrition-related problem.

Use your list of "Careers with Nutrition Know-How" in completing the activity.

1. Dear Nutrition Know-it-All:

   I am president of the PTA at my son's school. A survey conducted by the PTA revealed that over half of the students come to school without breakfast. Furthermore, many students bring sack lunches from home which contain candy, snack foods, and sweets, but no fresh fruits or vegetables. The PTA believes that we must educate parents about the importance of good nutrition as well as about the variety of foods which can be served for breakfast and lunch. Whom should we invite to teach the class?

   ____

2. Dear Nutrition Know-It-All:

   My little brother Eddie never believes anything I tell him. For example, yesterday, when he wanted to buy a cola drink and candy bar at the movies, I would not let him. I told him that sugar is bad for his teeth. Then, last night, I caught him after he had eaten half of a large chocolate candy bar. I told him he would have two more cavities when he visits the dentist tomorrow. He just finished eating the candy bar. Is there anyone he might believe?

   ____

3. Dear Nutrition Know-It-All:

   I am interested in improving my health, but I want facts, not fairy tales. Does the use of pesticides really affect the nutritional value of fruits and vegetables? Who might have done some research on this subject?

   ____

4. Dear Nutrition Know-It-All:

   As the only surviving relative of my dear cousin, Horace, I have just inherited a dairy farm of 300 cows. I am excited about the prospect of moving to the country, but I know nothing about cows. Where can I go for help?

   ____

5. Dear Nutrition Know-It-All:

   I am the president of the student council at my high school. The student council wants to help the student body learn more about different cultures by tasting the foods of various ethnic and national groups. We would like to be able to have these foods served in the cafeteria. Is there someone we should contact for help in planning and implementing our program?

   ____

6. Dear Nutrition Know-It-All:

   I am going to have a baby and want to make sure that I eat properly during my pregnancy. Unfortunately, I know nothing about nutrition and have very poor eating habits. I live near a hospital clinic and am hoping the hospital will offer a class that could help me. Do you know who would be responsible for teaching the class?

   ____

Name ______________________

Review of College Physical Education Program

List courses required ______________________

____

____

____

Circle any classes dealing with nutrition.

Do you think nutrition knowledge is important for a physical education major or athlete? Why? ______________________

____

____

____

____

Does this program offer the number of nutrition classes you think is appropriate? Why or why not? ______________________

____

____

____

____

Name ________________________

Quiz

Careers Using a Knowledge of Nutrition

Directions: In the right-hand column is a list of problems which would be solved by a worker with a knowledge of nutrition. Match the title of the worker listed in the left-hand column with the problem. Write the number of the problem on the line next to the worker's title.

Note: Two of the problems can each be solved by *two* of the workers listed.

Worker's Job Titles

Medicine

_____ A. Physician

_____ B. Dentist

_____ C. Dental Hygienist

_____ D. Registered Nurse

Biology

_____ E. Biologist

Food Science

_____ F. Food Scientist/Technologist

_____ G. Agriculture Science Extension Agent

_____ H. Home Economist

_____ I. Homemaker-Home Health Aide

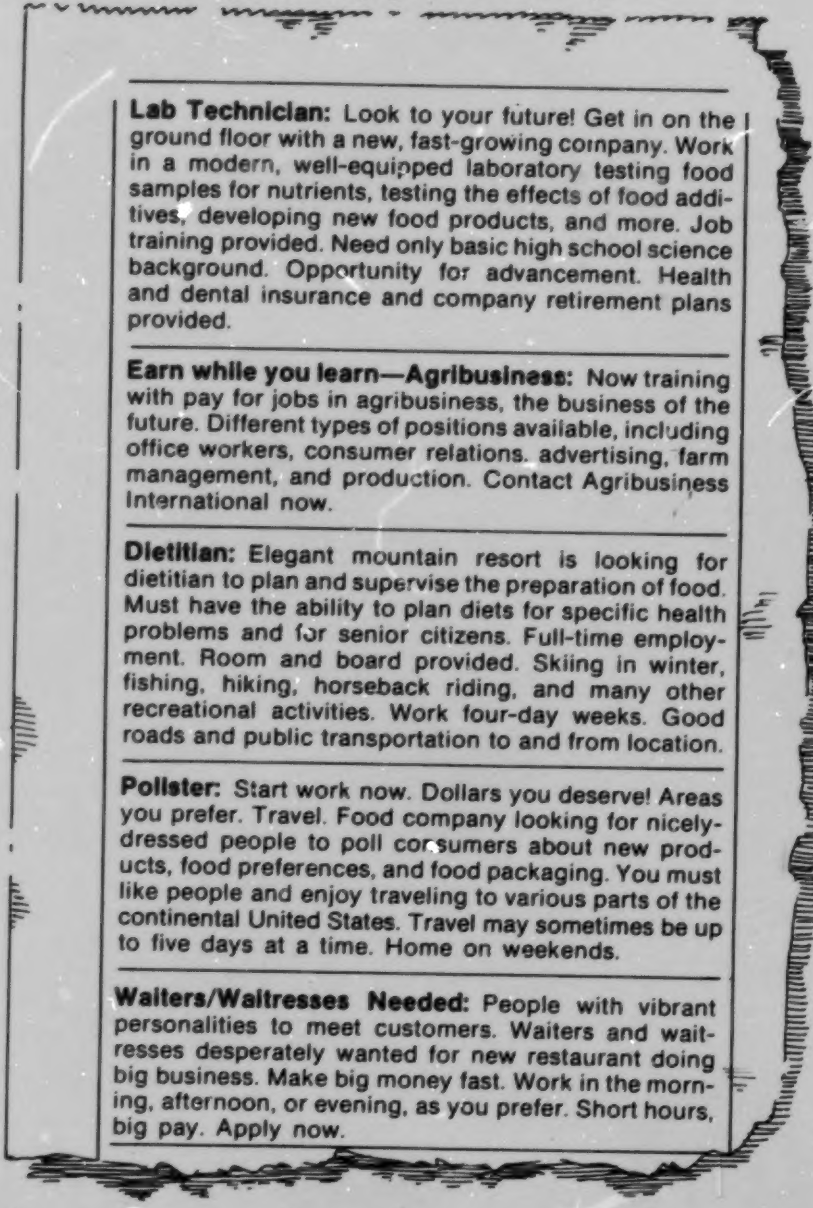
_____ J. School Food Service Coordinator

Problem

1. A company wants to develop an improved line of dehydrated foods that can be used by backpackers.
2. A man injured in an auto accident needs at-home assistance in cleaning and meal preparation.
3. The government wants to know the effect of pesticides on plant life.
4. Mrs. Jones is overweight and needs professional help in order to reduce.
5. A community college teacher needs a guest speaker to inform her students about proper feed for dairy cows.
6. A school district wants to improve the nutritional quality and variety of foods served in the district's school cafeterias.
7. A tuna canning company wants to offer classes showing the many ways in which tuna can be used in meal preparation.
8. Billy's mother needs someone to tell him about the number of cavities he has.

Name ______________________

Job Opportunities



Lab Technician: Look to your future! Get in on the ground floor with a new, fast-growing company. Work in a modern, well-equipped laboratory testing food samples for nutrients, testing the effects of food additives, developing new food products, and more. Job training provided. Need only basic high school science background. Opportunity for advancement. Health and dental insurance and company retirement plans provided.

Earn while you learn—Agribusiness: Now training with pay for jobs in agribusiness, the business of the future. Different types of positions available, including office workers, consumer relations, advertising, farm management, and production. Contact Agribusiness International now.

Dietitian: Elegant mountain resort is looking for dietitian to plan and supervise the preparation of food. Must have the ability to plan diets for specific health problems and for senior citizens. Full-time employment. Room and board provided. Skiing in winter, fishing, hiking, horseback riding, and many other recreational activities. Work four-day weeks. Good roads and public transportation to and from location.

Pollster: Start work now. Dollars you deserve! Areas you prefer. Travel. Food company looking for nicely-dressed people to poll consumers about new products, food preferences, and food packaging. You must like people and enjoy traveling to various parts of the continental United States. Travel may sometimes be up to five days at a time. Home on weekends.

Waiters/Waitresses Needed: People with vibrant personalities to meet customers. Waiters and waitresses desperately wanted for new restaurant doing big business. Make big money fast. Work in the morning, afternoon, or evening, as you prefer. Short hours, big pay. Apply now.

The job I would most like is ______________________________.

One of my values about a job is that it provides ______________________________

______________________________.

Some of my values about a job are that it provides ______________________________,

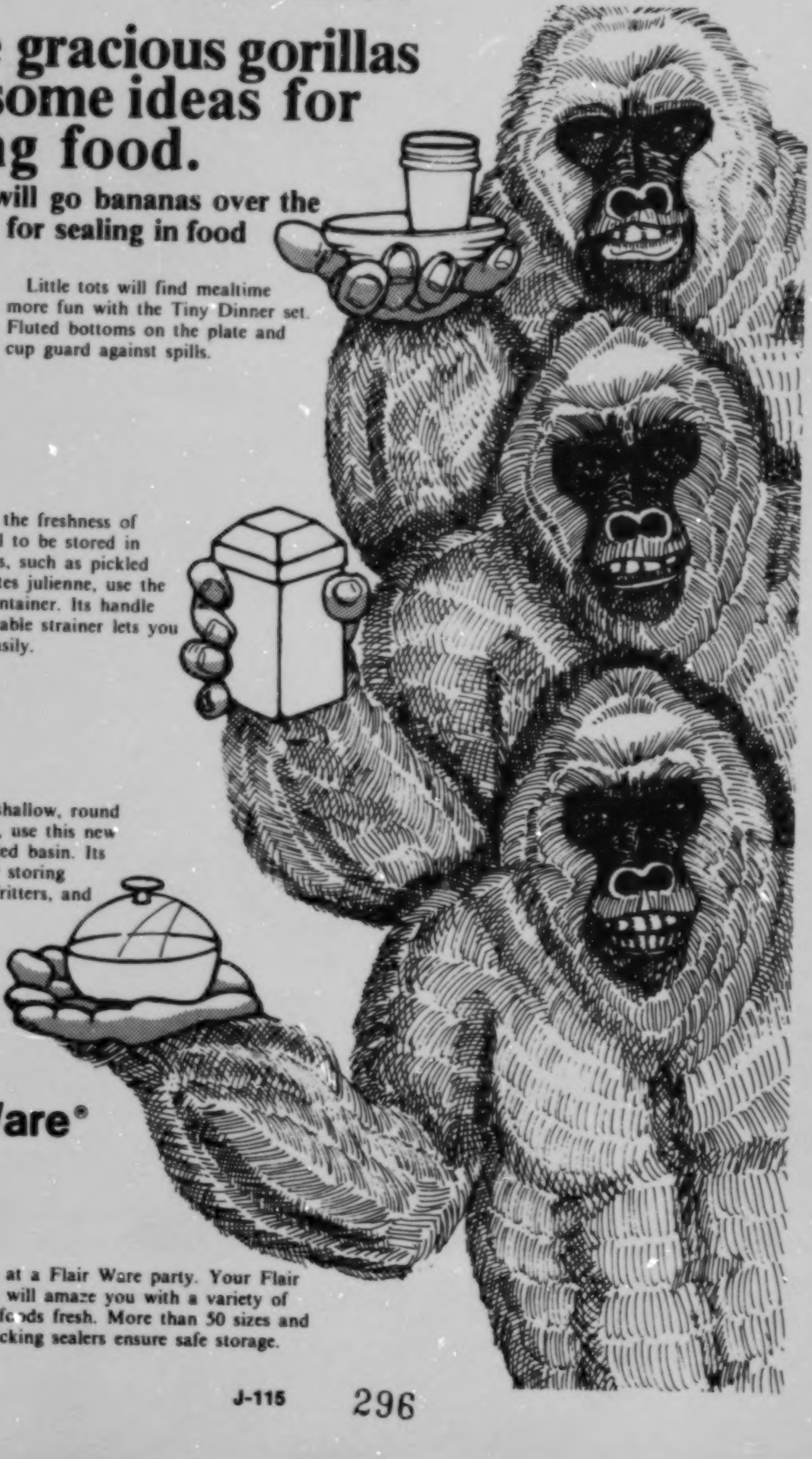
______________________________,

and ______________________________.

Information

These gracious gorillas have some ideas for storing food.

You, too, will go bananas over the latest ideas for sealing in food freshness.



Little tots will find mealtime more fun with the Tiny Dinner set. Fluted bottoms on the plate and cup guard against spills.

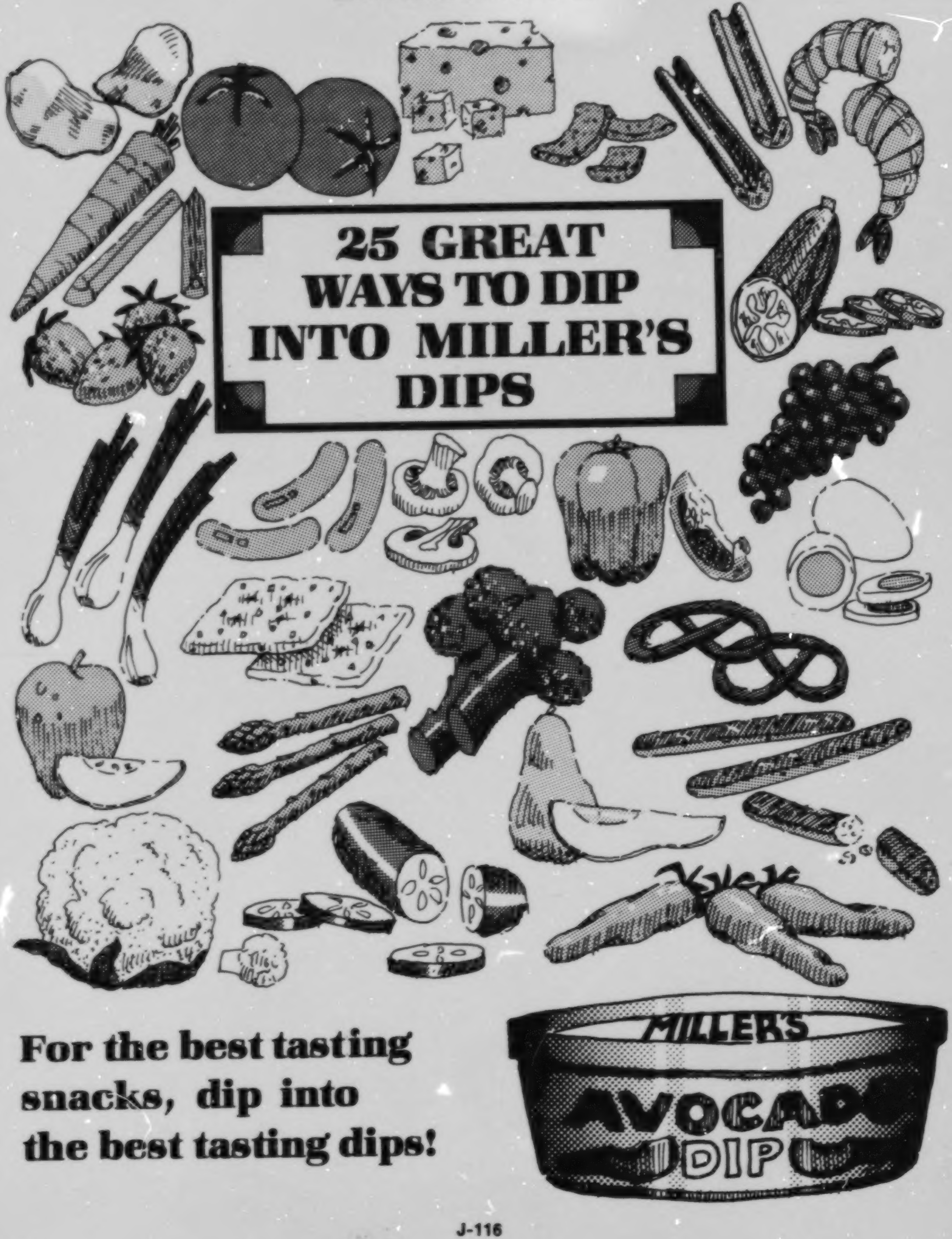
To maintain the freshness of foods that need to be stored in their own juices, such as pickled leaves or termites julienne, use the Food-Strain container. Its handle with the removable strainer lets you remove food easily.

When you need a shallow, round bowl that holds a lot, use this new 34 oz Supremely Sealed basin. Its shape is just right for storing banana crepes, bark fritters, and more.

Flair Ware®

Join your friends at a Flair Ware party. Your Flair Ware representative will amaze you with a variety of products that keep foods fresh. More than 50 sizes and shapes with their locking sealers ensure safe storage.

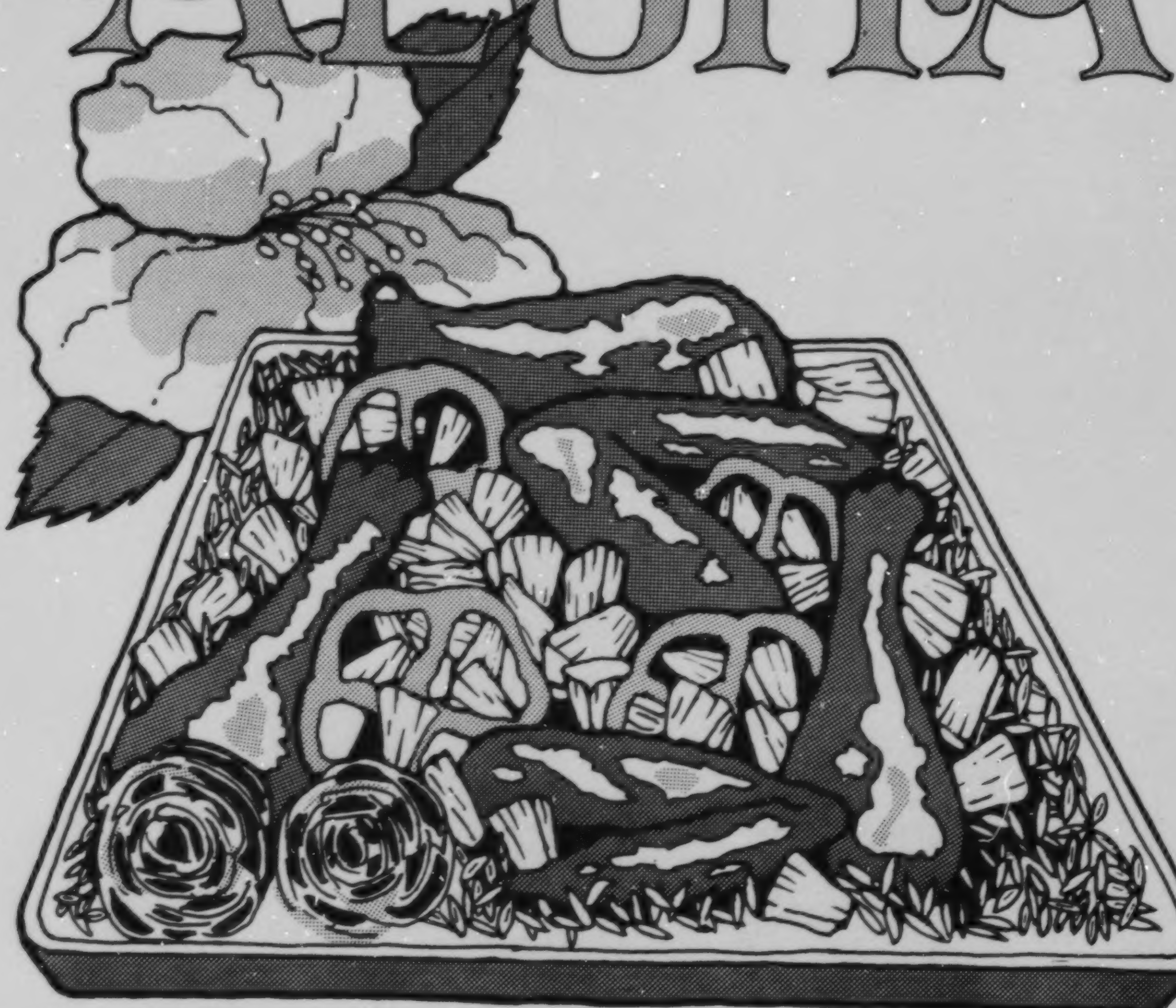
Entertainment


25 GREAT WAYS TO DIP INTO MILLER'S DIPS
MILLER'S
AVOCADO DIP

For the best tasting snacks, dip into the best tasting dips!

Give Away

ALOHA



Pineapple Chicken

- 2 pounds chicken parts
- ½ tsp monosodium glutamate
- 1 tbsp soy sauce
- 2 tsp salt
- 2 tsp sugar
- 2/3 cup sifted flour
- 1 tbsp soy sauce
- 1 can (8 oz) pineapple chunks
- 1 can Mom's chicken broth
- 1 green pepper (cut in squares)

1. Wash and clean chicken.
2. Sprinkle chicken with monosodium glutamate.
3. Combine soy sauce, salt, and sugar; spread on chicken pieces.
4. Dredge chicken in flour.
5. Fry in deep fat (365 F) approximately 10 minutes.
6. Place chicken, skin side up, in each roasting pan.
7. Combine soy sauce, pineapple, and broth; spread over top of chicken in each pan. Add green pepper.
8. Cover and bake at 350 F until chicken is tender, approximately 1¼ hours. Serves four.

MOM'S SOUP
Chicken Broth
MOM'S SOUP
Onion
MOM'S SOUP
Tomato

23—78746

Status

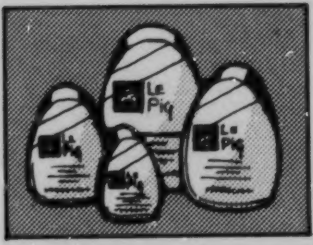
Does paying more for the filet of ham pay off?

Le Pig by Weaver Enterprises is more costly, but it's great canned ham. Le Pig is a specially trimmed, all lean meat filet. You never have to worry about fat.

To bring you Le Pig, our superbly skilled meat cutters at Weaver Enterprises trim away two-thirds of the ham. What remains is the filet—tender, lean, succulent, and scrumptious.

Then, for hours, this supreme filet is cooked slowly in its own natural juices.

Le Pig makes mealtime easy. All you do is heat, carve, and eat. You'll be transported into *hamonious* rapture.



Select the size of your Le Pig filet of ham to feed a crowd, a family, or a friend.

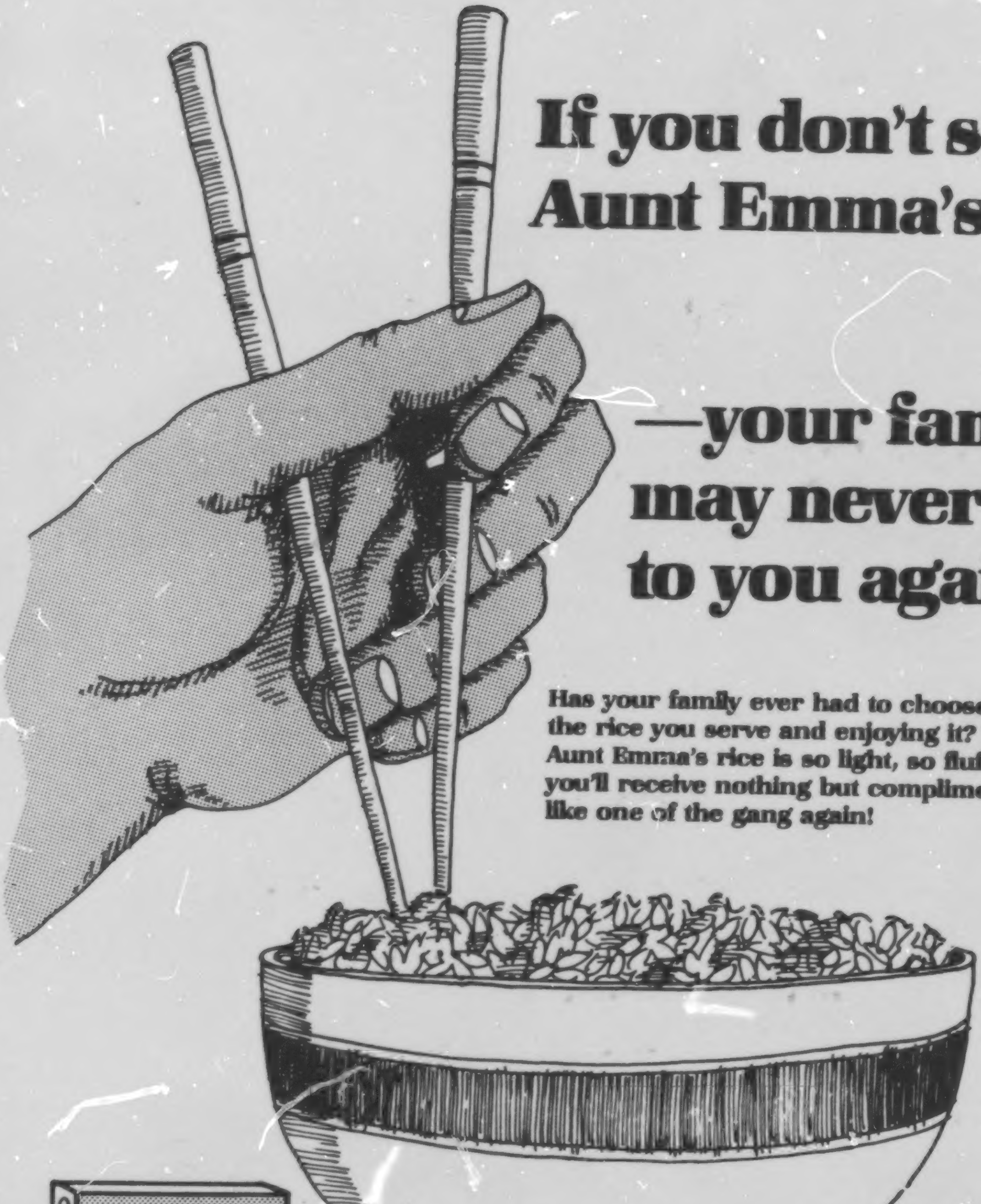
For memories of wonderful ham, remember Le Pig from Weaver Enterprises.

Filet of Ham

Le Pig

by Weaver Enterprises

Peer Approval



If you don't serve Aunt Emma's Rice—

—your family may never speak to you again!

Has your family ever had to choose between eating the rice you serve and enjoying it? Well, no more. Aunt Emma's rice is so light, so fluffy, so moist, you'll receive nothing but compliments! You'll feel like one of the gang again!

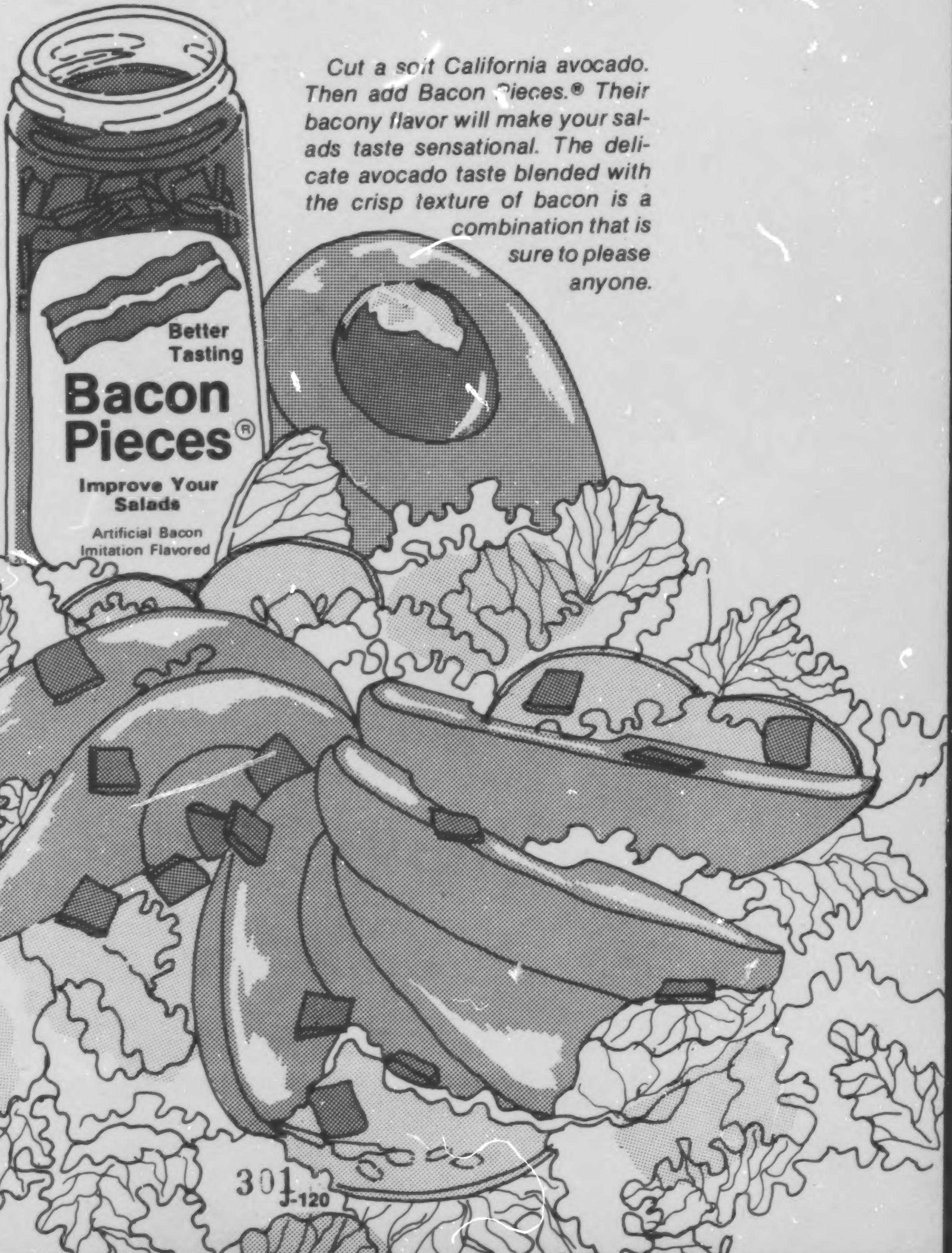
Aunt Emma's
Rice

Aunt Emma's Rice • unexpectedly moist • unexpectedly delicious

Good Taste

Improve Your Salads with Bacon Pieces® and Avocado.

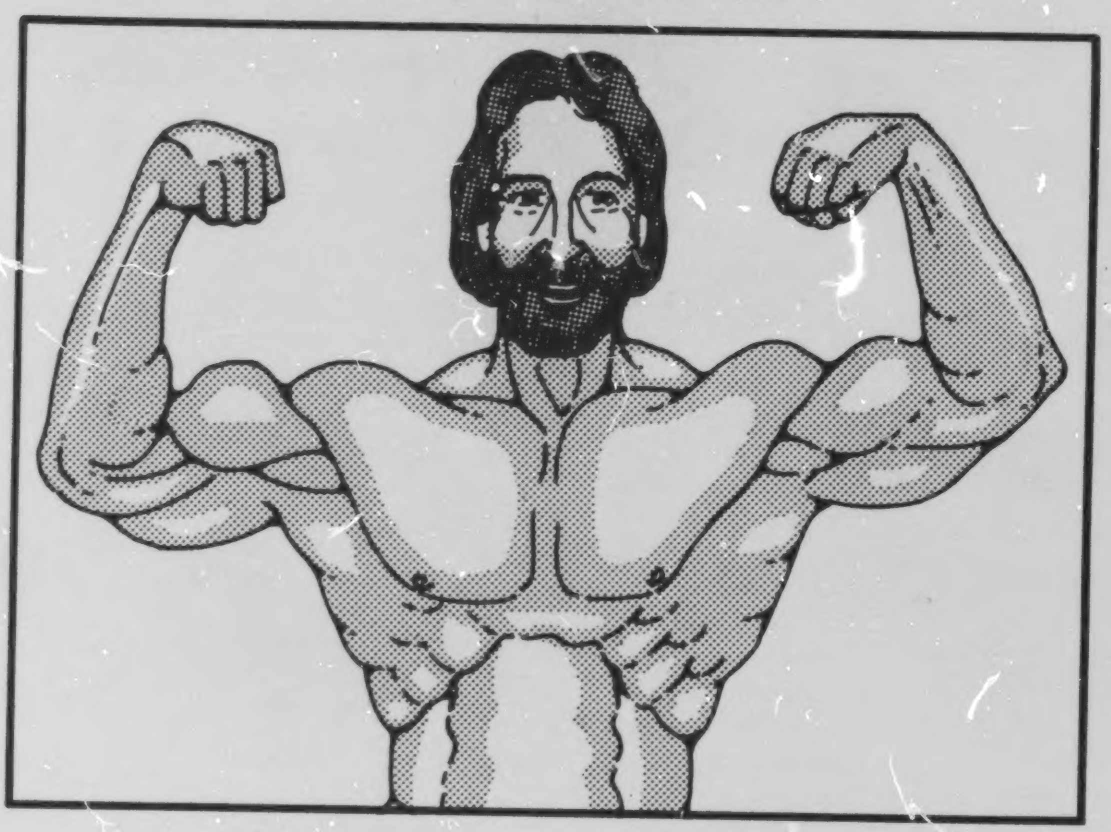
Cut a soft California avocado. Then add Bacon Pieces.® Their bacony flavor will make your salads taste sensational. The delicate avocado taste blended with the crisp texture of bacon is a combination that is sure to please anyone.


Better Tasting
Bacon Pieces®
Improve Your Salads
Artificial Bacon Imitation Flavored

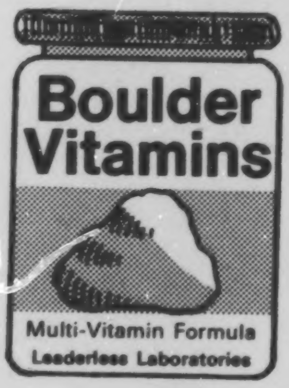
301

J-120

Hero Endorsement



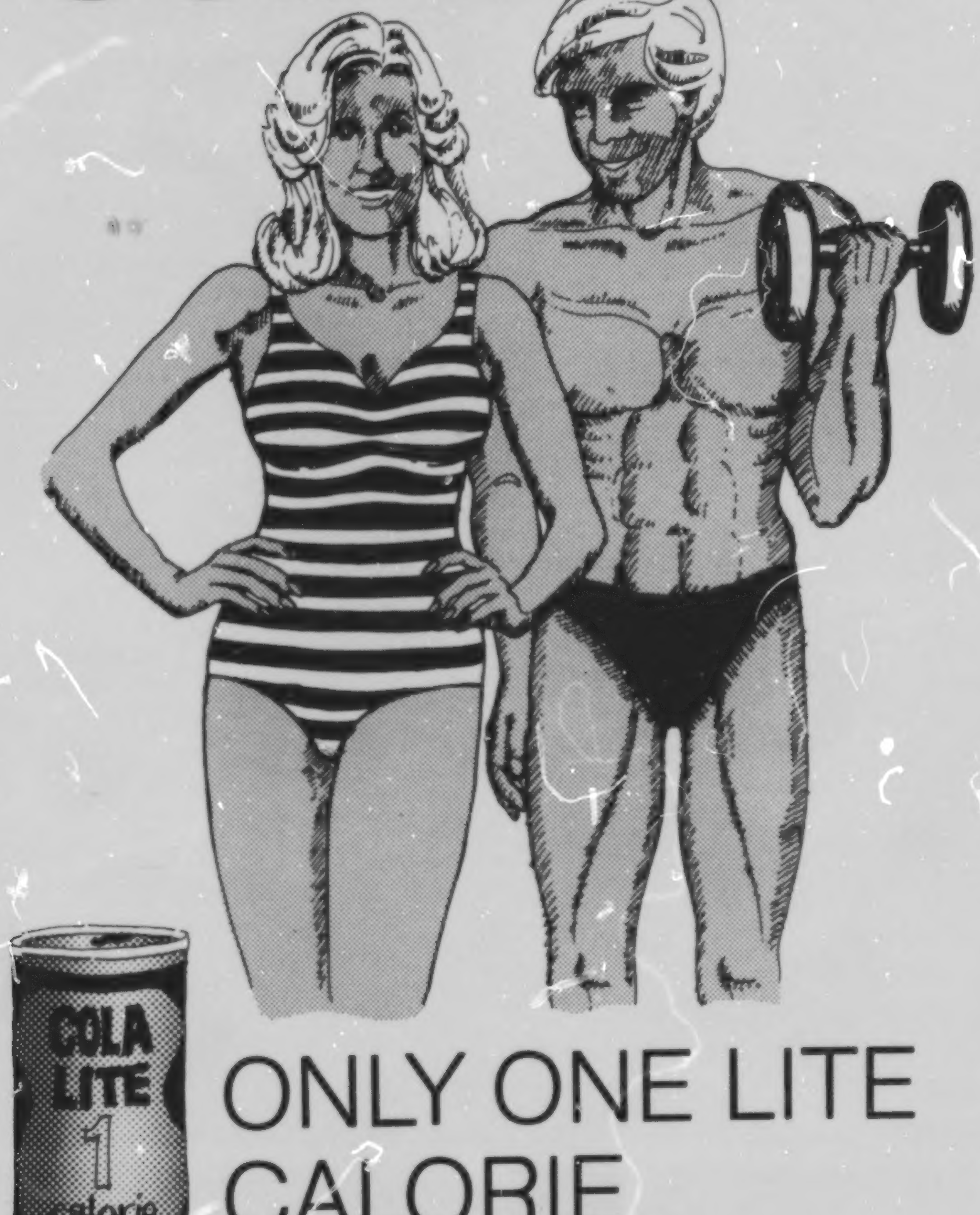
"I built a better body with Boulder Vitamins. Now I have megatons of energy."


Boulder Vitamins
Multi-Vitamin Formula
Leaderless Laboratories

Phil Physique

Sexual Attraction

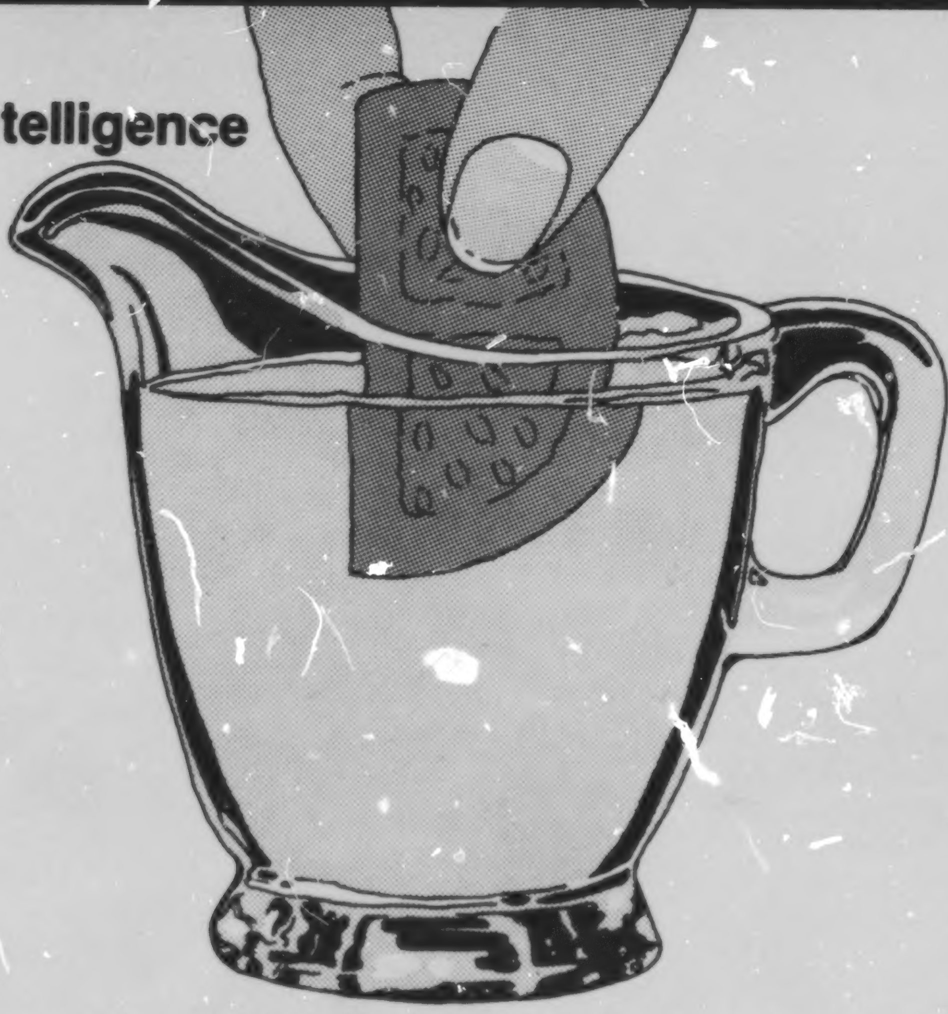
COLA • LITE


COLA
LITE
1
calorie

ONLY ONE LITE
CALORIE

J-122

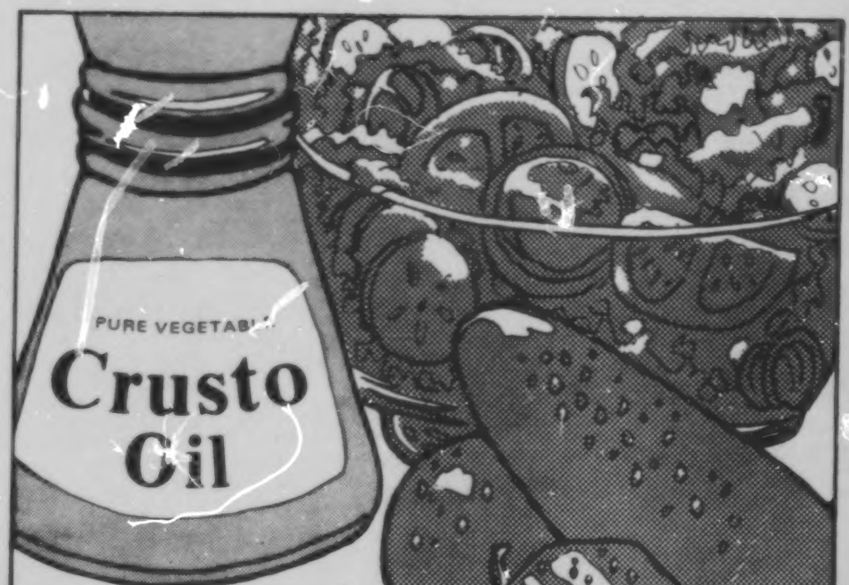
Intelligence



A simple test shows why you should use Crusto Oil.

Dip any vegetable into Crusto Oil. You'll taste the vegetable alone, not the oil.

Get rid of the oily taste in your salads, use Crusto.


PURE VEGETABLE
Crusto
Oil

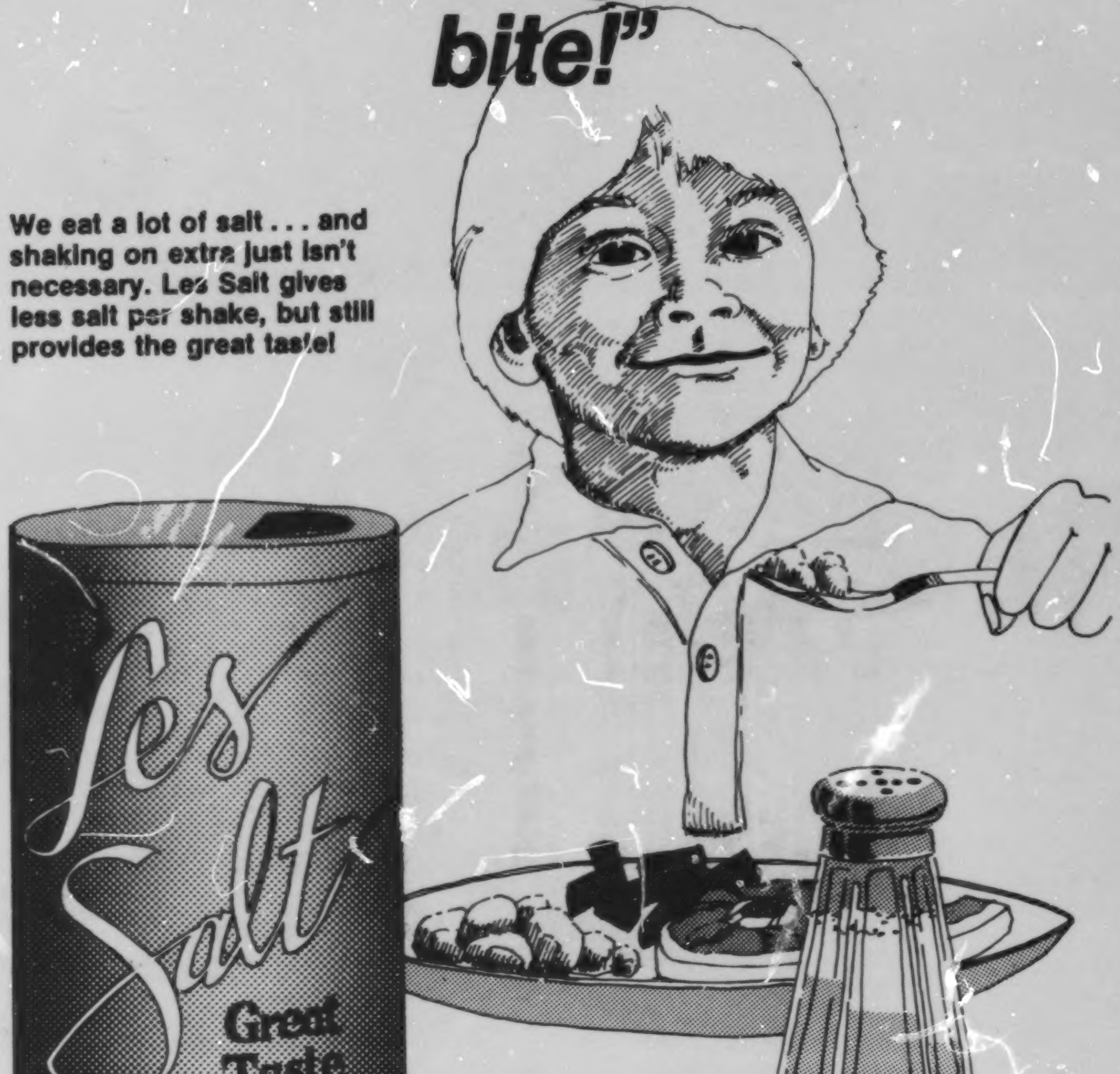
And Crusto Oil has no Cholesteral

J-123

Independence

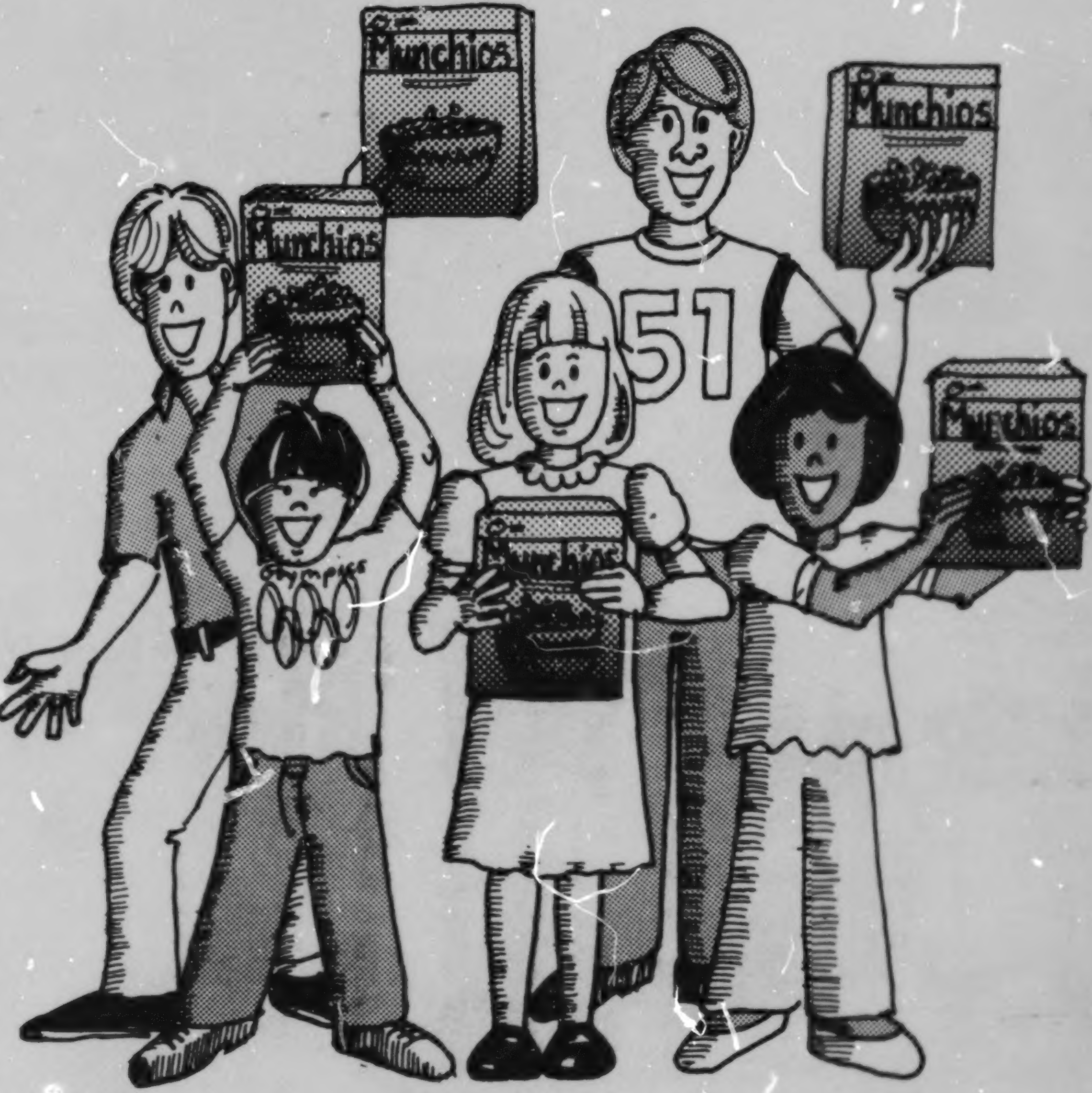
"I'm eating less salt and loving every bite!"

We eat a lot of salt . . . and shaking on extra just isn't necessary. Les Salt gives less salt per shake, but still provides the great taste!



Join the Gang

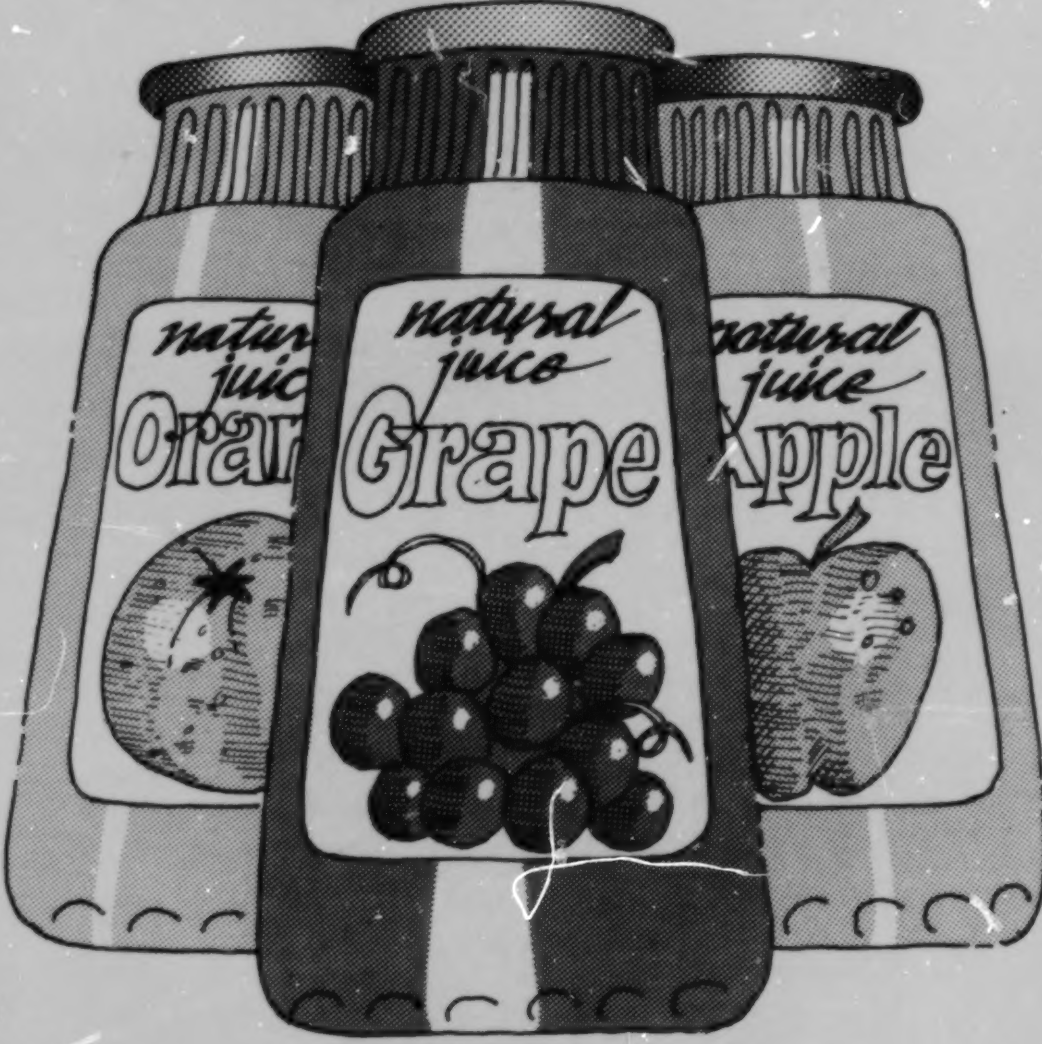
Munchios


Munchios
Munchios
Munchios
Munchios
Munchios
51
Olympics

You Made Them Number One

Dangling Comparative

RECOMMENDED 6 TO 1 BY THOSE WHO KNOW


natur
juic
Oran
natural
juice
Grape
natural
juice
Apple

- No artificial flavors
- No artificial colors
- No artificial sweeteners
- 100% natural

The good juice that's good for you!

J-126

Testimonial

Mrs. Small's Superior Crunchy Batter Fish Fillets We've never made them better.

During the past quarter century, Mrs. Small has made a lot of superior seafood. And the wonderful letters we've received about our new crunchy Batter Fish Fillets make us feel that we've never made a better product. Here is what some people have said about Mrs. Small's Batter Fish Fillets:

Dear Mrs. Small:

I've lost weight since I've been serving your new crunchy Batter Fish Fillets. The chewy perch dipped in egg yolk and whole wheat flour really takes the pounds off.

Mrs. Gourmand Glutz,
Straddletree, Ore.

Dear Mrs. Small:

Since I've been eating your new crunchy Batter Fish Fillets, I can jog farther and faster. I trust the chewy perch dipped in polyunsaturated, low cholesterol egg yoke and natural, unprocessed whole grain wheat flour to be free from additives. Our entire jogging group is really into your crunchy Batter Fish Fillets.

Mr. Stacey Twince,
Seafoam, Calif.

Dear Mrs. Small:

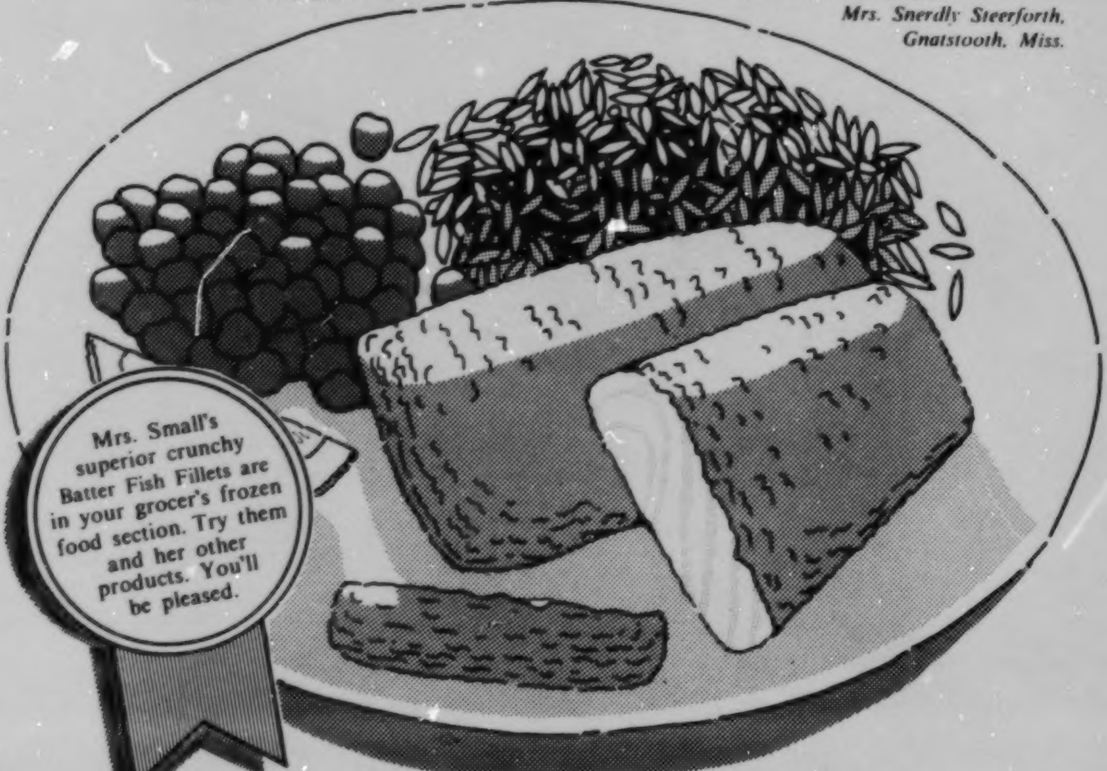
I have a fatter bank account since I've been eating your new crunchy Batter Fish Fillets. The chewy perch dipped in egg yolk and whole wheat flour is so filling that I don't have to buy other food.

Ms. Pecunious McGrinch,
Shady Incline, Ill.

Dear Mrs. Small:

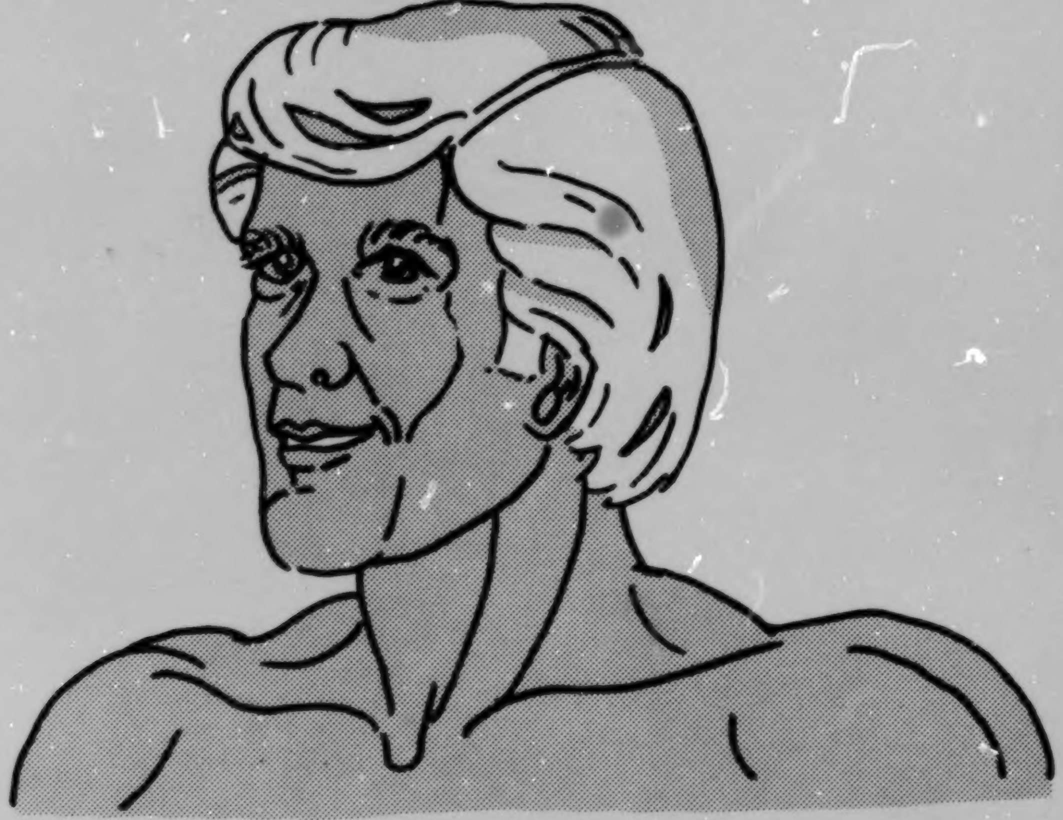
Your new crunchy Batter Fish Fillets are a family favorite. I don't have to force my family to eat the chewy perch dipped in egg yolk and whole wheat flour. When it's crunchy batter night, you should hear the cheers at our house.

Mrs. Snerdly Steerforth,
Gnatstooth, Miss.


Mrs. Small's superior crunchy Batter Fish Fillets are in your grocer's frozen food section. Try them and her other products. You'll be pleased.

Impossible Results

Each day drains you of vitamins.



Let Macro-Blast Vitamins restore them.

Macro Blast
Vitamins

Your body doesn't store vitamin C and the B complex vitamins. You lose them each day. To maintain your superiority, you've got to replace these vitamins daily.

Take one Macro-Blast Vitamin tablet each day, and you'll feel powerful enough to destroy entire cities. Each Macro-Blast Vitamin contains enough vitamin C to cover a 30 square mile radius and enough of the vitamin B complex to cover a 50 square mile radius. The iron in these vitamins has the power to blast you to the rings of Saturn.

Don't let a lack of vitamins weaken your defenses. Be a superpower with Macro-Blast Vitamins!

Name ______________________

Do You Listen?

Can you name the product that uses the following jingle?

1. Melts in your mouth, not in your hands ______________________
2. The Uncola ______________________
3. Breakfast of Champions ______________________
4. Mountain grown ______________________
5. Nothing is too good for daddy and me. Mom brings home ______________________
6. Ask any mermaid you happen to see. ______________________
7. Snap Crackle Pop ______________________
8. Finger-lickin' good ______________________
9. Have it your way. ______________________
10. M-m-m-m-m-m good ______________________
11. You deserve a break today. ______________________
12. The San Francisco treat ______________________
13. Sorry, Charlie ______________________
14. Tony the Tiger says, "It's Gr-r-reat!" ______________________
15. Is it soup yet? ______________________
16. Slowest catsup in the West ______________________
17. It's not nice to fool Mother Nature. ______________________
18. Everything's better with ______________________
19. I wish I were ______________________
20. Bet you can't eat just one ______________________

J-129

Name ____________________

Commercial Tricks Are for Kids!

Watch television for one hour on Saturday morning between 8 and 11 a.m.

1. How many commercials did you see? ____________________
2. How many food commercials did you see? ____________________
3. What kinds of foods were advertised most? (Snacks, desserts, breakfast food, main dish, fruits, vegetables, and so on.)

____

____

Pick one food commercial and answer the following questions:

1. Name of product ____________________
2. What advertising technique did the commercial use to influence you? (Information, status, peer approval, good taste, hero endorsement, sexual attraction, join the gang, entertainment, intelligence, independence, dangling comparative, give away, testimonial, and impossible results)

____

____

3. What techniques were used to keep your attention? (Lively music, cartoons, kids having fun, and so on.)

____

____

4. Did the commercial convince you that this product is nutritious?

☐ Yes ☐ No

Why? ____________________

____

____

Name ____________________

Commercial Tricks Are for Everyone!

Watch television for one hour any evening (prime time), Monday through Friday, between 7 and 9 p.m.

1. How many commercials did you see? ____________________
2. How many food commercials did you see? ____________________
3. What kinds of foods were advertised most? (snacks, desserts, breakfast food, main dish, fruits and vegetables, and so on.)

____

____

Pick one food commercial and answer the following questions:

1. Name of product ____________________
2. What advertising technique did the commercial use to influence you? (Information, status, peer approval, good taste, hero endorsement, sexual attraction, join the gang, entertainment, intelligence, independence, dangling comparative, give away, testimonial, and impossible results)

____

____

3. What techniques were used to keep your attention? (Lively music, cartoons, kids having fun, and so on.)

____

____

4. Did the commercial convince you that this product is nutritious?

☐ Yes ☐ No

Why? ____________________

____

____

Name ______________________

Do You Know?

A. Identify the two types of advertising.

B. Write a definition for each of the following advertising techniques:

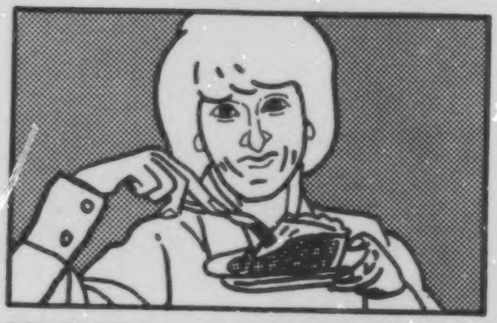
1. Information
2. Status
3. Peer approval
4. Good taste
5. Hero endorsement
6. Sexual attraction
7. Join the gang
8. Entertainment
9. Intelligence
10. Independence
11. Dangling comparative
12. Testimonials
13. Give aways
14. Impossible results

Is It True?

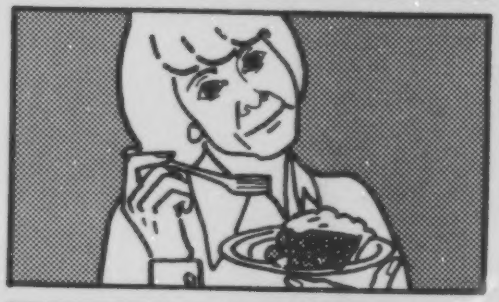
Evaluate this ad for misrepresentation:

Have You the Courage

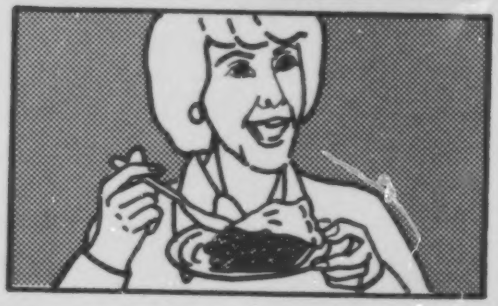
to let your best friend rate your piecrust for flakiness?



Argh! Too tough for my front teeth!



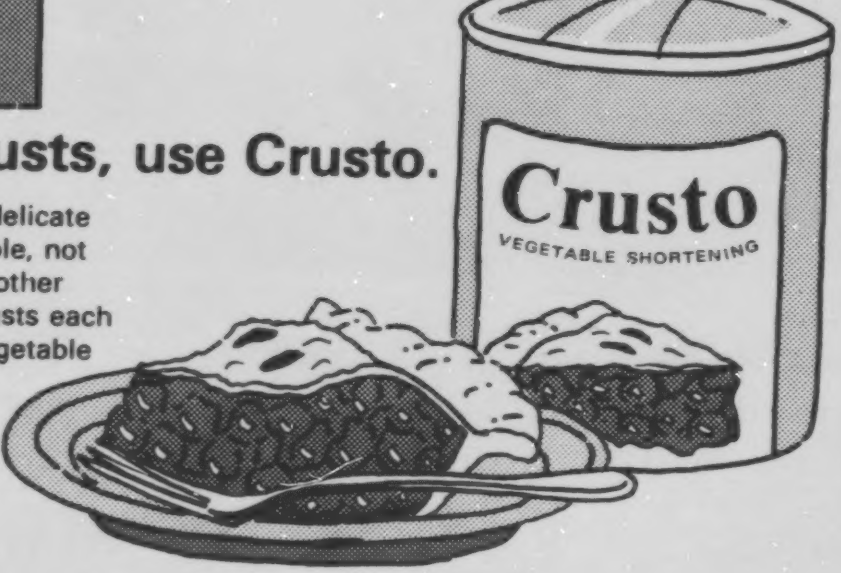
**It's not quite right.
It needs a touch of vegetable oil.**



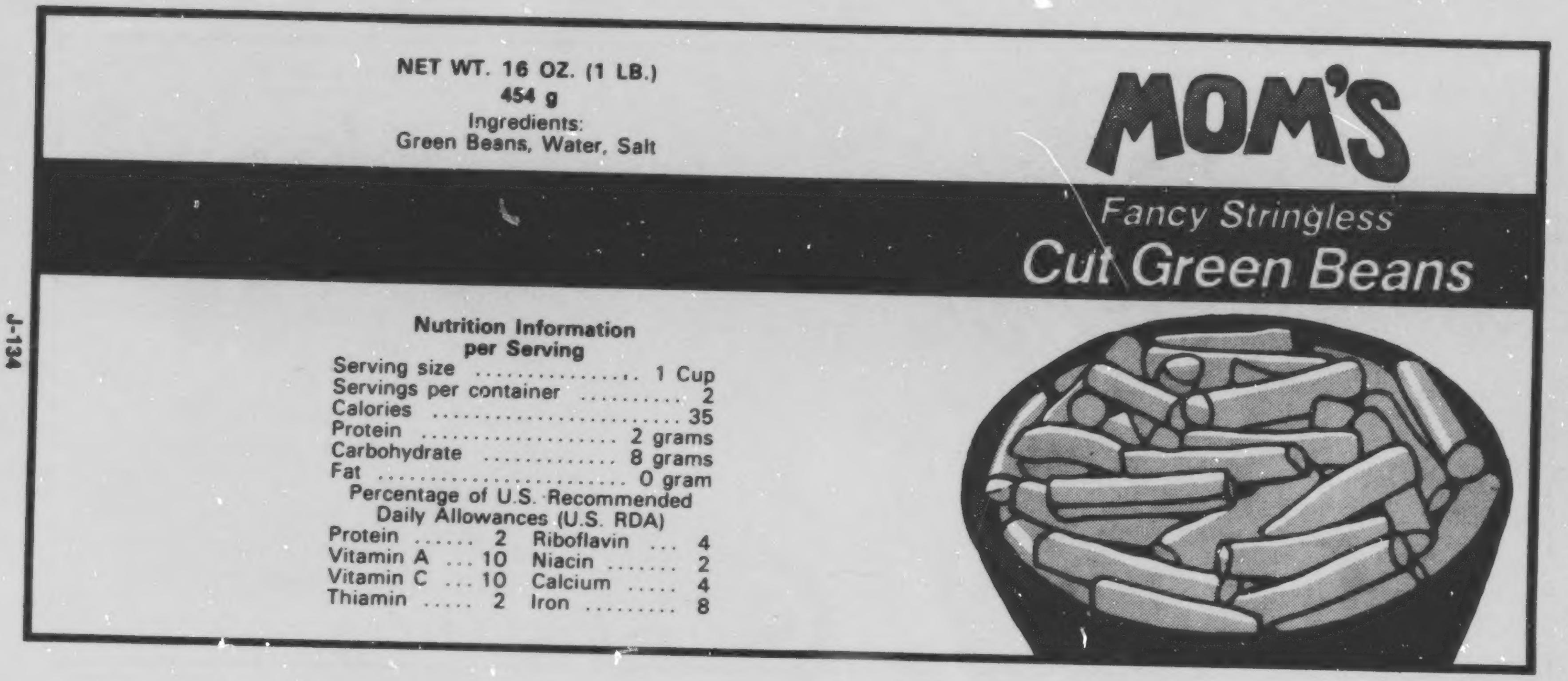
Oh yummy! That's tender!

For tender piecrusts, use Crusto.

How does Crusto produce such delicate tenderness? Crusto is all vegetable, not partly vegetable as are so many other shortenings. So for tender piecrusts each time you bake, always use all-vegetable Crusto.



Label: Mom's Fancy Stringless Cut Green Beans



NET WT. 16 OZ. (1 LB.)
454 g
Ingredients:
Green Beans, Water, Salt

MOM'S
Fancy Stringless
Cut Green Beans

Nutrition Information
per Serving

Serving size	1 Cup
Servings per container	2
Calories	35
Protein	2 grams
Carbohydrate	8 grams
Fat	0 gram

Percentage of U.S. Recommended
Daily Allowances (U.S. RDA)

Protein	2	Riboflavin	4
Vitamin A	10	Niacin	2
Vitamin C	10	Calcium	4
Thiamin	2	Iron	8

J-134

Label: Bob's French-Style Green Beans

J-135

Ingredients: Green Beans, Water, Salt

Nutrition Information—per one cup serving
Servings per container—Approx. 2

Calories	35	Carbohydrate	7g
Protein	2g	Fat	0g

Percentage of U.S. Recommended Daily Allowances (U.S. RDA) per one cup serving

Protein	2	Niacin	2
Vitamin A	15	Calcium	6
Vitamin C	6	Iron	8
Thiamine (Vit. B1)	2	Phosphorus	2
Riboflavin (Vit. B2)	4	Magnesium	6

Net Wt. 16 oz (1 lb)
454g

Cups .... Approx. 2

For good nutrition eat a
variety of foods.

*Wt. of beans (8¾ oz)
before addition
of liquid necessary
for processing

BOB'S

French Style
Green Beans

Name ______________________

Quiz

1. Define the word advertising.

2. Name the two forms of advertising.

3. Define and describe three advertising techniques.

4. List two examples of clues to advertising misrepresentation.

5. Define the word "merchandising."

6. List one way the label on a product influences the consumer to purchase that product.

   Give an example:

7. List one way the supermarket influences the consumer to purchase a given product.

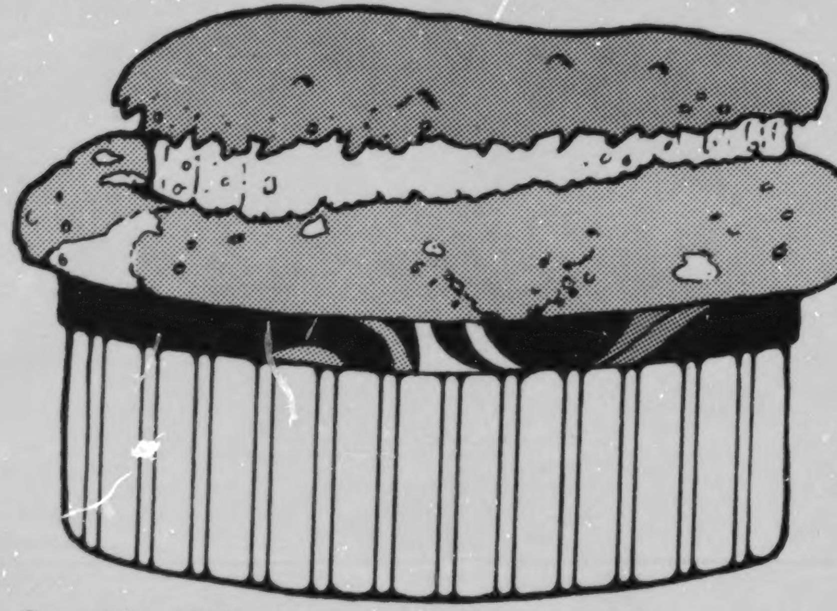
   Give an example:

8. List two reasons why consumers shop where they do.

9. Evaluate the ad entitled "French Cuisine Without Overweight" for misrepresentation.

French Cuisine Without Overweight

Stephanie Sterling wanted to lose weight; so she tried different kinds of diets. First, she tried the vinegar and grapefruit diet. Her stomach turned sour. Next, she tried the whole wheat porridge diet. Everything tasted like wallpaper paste. She even tried the Don't-Eat-It-Unless-It's-Green-Diet. Alfalfa sprouts came out of her ears.



Stephanie learned that fad diets rarely work. The food usually tastes awful. Self-discipline is difficult; so one cheats and feels guilty.

Stephanie then discovered Scale Gazers' Frozen Foods, a variety of 30 delicious meals for common sense weight reduction.

She learned that taste lacks calories.

Her guilt pangs about overeating disappeared when she ate our low calorie stuffed liver, which combines zingy garlic with mushrooms, defatted goose liver, and our special herbal seasoning. She amazed her friends as her pounds dropped away.

When she weighed herself, she saw her scale needle go down because she had been eating Scale Gazers' frozen souffles, which contain only natural ingredients: compressed air egg whites, low fat egg yolks, and a uniquely seasoned sauce.

SCALE GAZERS

Stephanie lost weight and became healthier with Scale Gazers' additive-free veal croquetts, whose ingredients include: lean, grass-fed veal; organically grown vegetables; cholesterol-free eggs; and whole wheat bread crumbs.

You, too, can dine elegantly on Scale Gazers' Frozen Foods while you lose weight. Mealtime becomes a pleasure as unwanted pounds disappear. No longer will you feel guilt about glut.

Try Scale Gazers' Frozen Foods. All you have to lose is your pounds.

Name ______________________

Label Clues for Consumers

Information	Fresh food	Frozen food	Canned food	Packaged products
Name of food				
Brand name				
Net weight of contents (excluding liquid)				
Ingredients				
Variety, style, and packing medium				
Size of product (net weight)				
Artificial color, flavor, or preservatives				
Picture of product				
Size or maturity				
Freshness expiration date/pull date				
Number of servings				
Recipes				
Grade				
Name and address of packer or distributor				
Nutrition information				
Other information				

Write the name of the food product in the appropriate column. Check each item of information you find for each food product. Place an "R" after each item of information that is required by law.

Name ____________________

Vocabulary Match

Directions: Match the word with the correct definition.

A. ____ Calorie

B. ____ Protein

C. ____ Carbohydrate

D. ____ Fat

E. ____ Thiamin

F. ____ Riboflavin

G. ____ Niacin

H. ____ Calcium

I. ____ Iron

J. ____ Polyunsaturated fat

K. ____ Saturated fat

L. ____ Cholesterol

M. ____ Fatty acid

N. ____ Gram

O. ____ Percentage

P. ____ Sodium

Q. ____ Nutrition

R. ____ Dietitian

1. A fat, generally of plant origin, that is usually liquid at room temperature
2. One of the six nutrient groups that provides the most concentrated source of energy (9 calories per gram)
3. A vital part of every cell. This substance can be made in the body or obtained from food. It is also a major concern in atherosclerosis
4. A mineral essential for bone growth
5. A measure of energy. The amount of heat necessary to raise the temperature of one kilogram of water 1° C
6. A B-vitamin found in milk and milk products
7. A metric unit of weight
8. A person with an accredited degree in nutrition and diet therapy
9. A B-vitamin whose deficiency can cause beriberi
10. A mineral necessary for the formation of hemoglobin in the blood
11. One of the six nutrient groups needed for building and maintaining body tissue
12. A fat, usually of animal origin, that is generally solid at room temperature
13. One of the six nutrient groups, a good source of which is bread and cereals
14. The science of nourishing the body
15. An essential mineral whose over-consumption is associated with high blood pressure
16. A B-vitamin found in poultry, meat, fish, peanuts, and peanut butter that helps keep the nervous system healthy
17. A fraction or ratio with 100 as the denominator
18. A component of fat, one of which is essential for humans to obtain from their food

Name ____________________

What's for Dinner?

John and Susan are planning dinner for tonight. They are deciding which one of the foods (chunk pineapple, stewed tomatoes, or cut green beans) to add to their meal. Using the labels, answer the following questions:

1. Susan is concerned about calories. Which product has the fewest calories per serving?

   ____

2. John is worried about eating too many additives. Which food has the most additives?

   ____

3. John wants to choose the product which contains the most protein. Which product has the most protein? ____________________

4. According to the information you now have, which food product would you recommend John and Susan choose for their meal? Why?

   ____

   ____

   ____

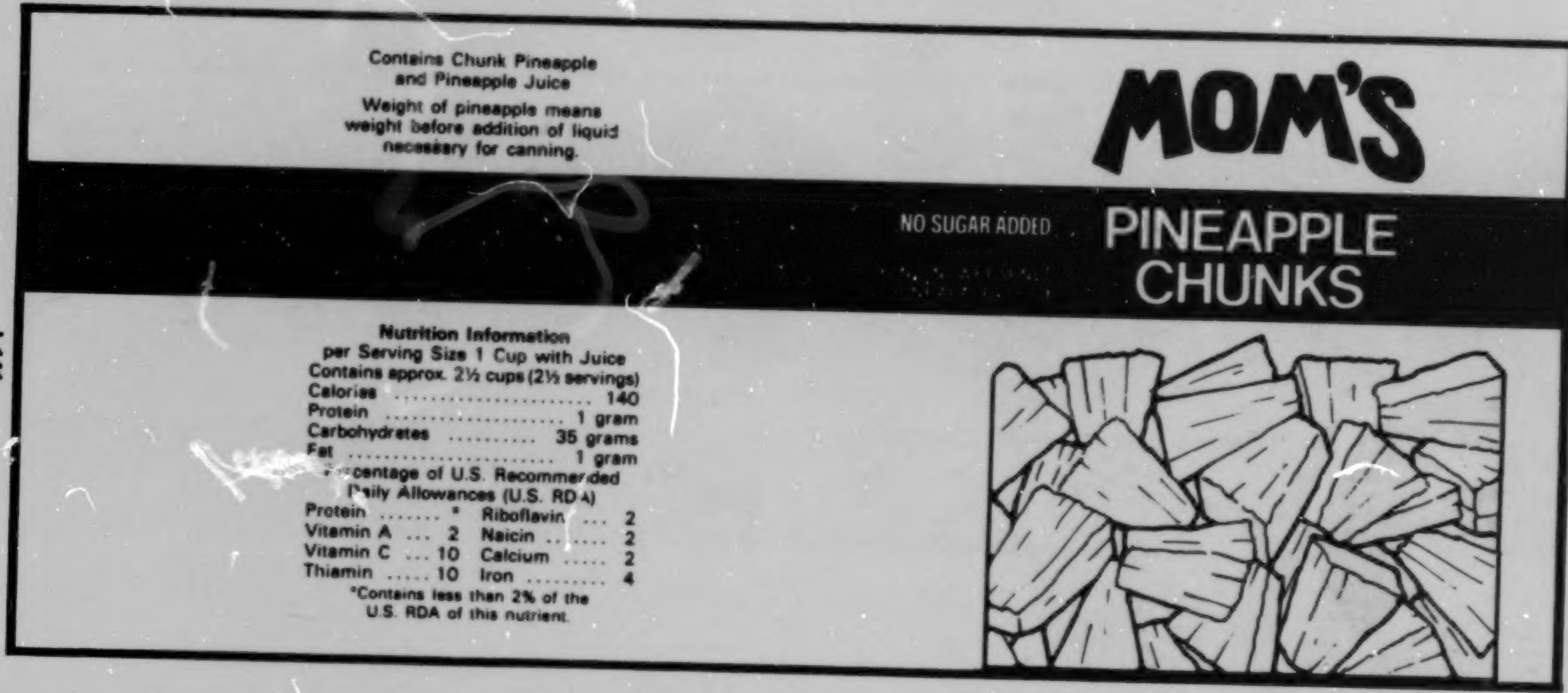
   ____

   ____

   ____

Label: Mom's Pineapple Chunks

J-141



Contains Chunk Pineapple
and Pineapple Juice

Weight of pineapple means
weight before addition of liquid
necessary for canning.

MOM'S

NO SUGAR ADDED

**PINEAPPLE
CHUNKS**

**Nutrition Information
per Serving Size 1 Cup with Juice
Contains approx. 2½ cups (2½ servings)**

Calories	140
Protein	1 gram
Carbohydrates	35 grams
Fat	1 gram

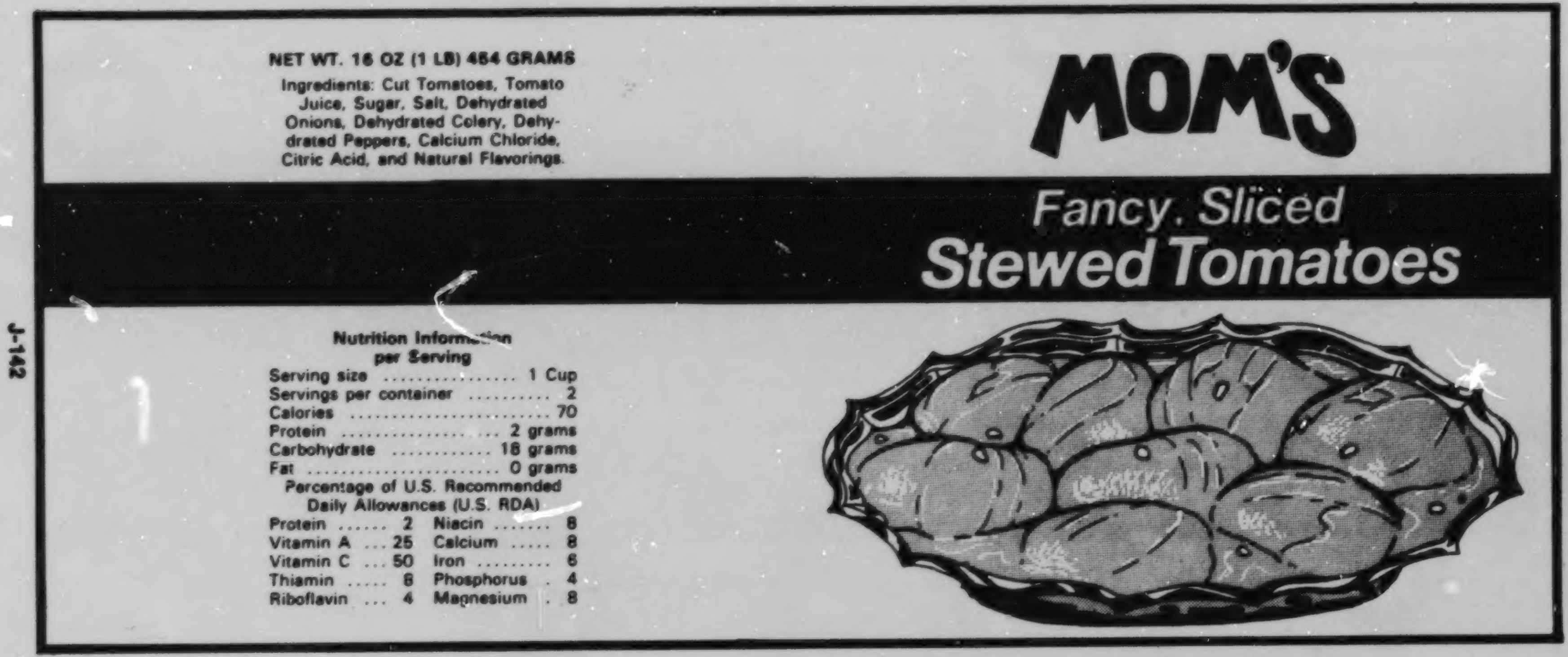
**Percentage of U.S. Recommended
Daily Allowances (U.S. RDA)**

Protein	*	Riboflavin	2
Vitamin A	2	Naicin	2
Vitamin C	10	Calcium	2
Thiamin	10	Iron	4

*Contains less than 2% of the
U.S. RDA of this nutrient.

Label: Mom's Fancy, Sliced Stewed Tomatoes

J-142



NET WT. 16 OZ (1 LB) 454 GRAMS

Ingredients: Cut Tomatoes, Tomato Juice, Sugar, Salt, Dehydrated Onions, Dehydrated Celery, Dehydrated Peppers, Calcium Chloride, Citric Acid, and Natural Flavorings.

MOM'S

Fancy, Sliced

Stewed Tomatoes

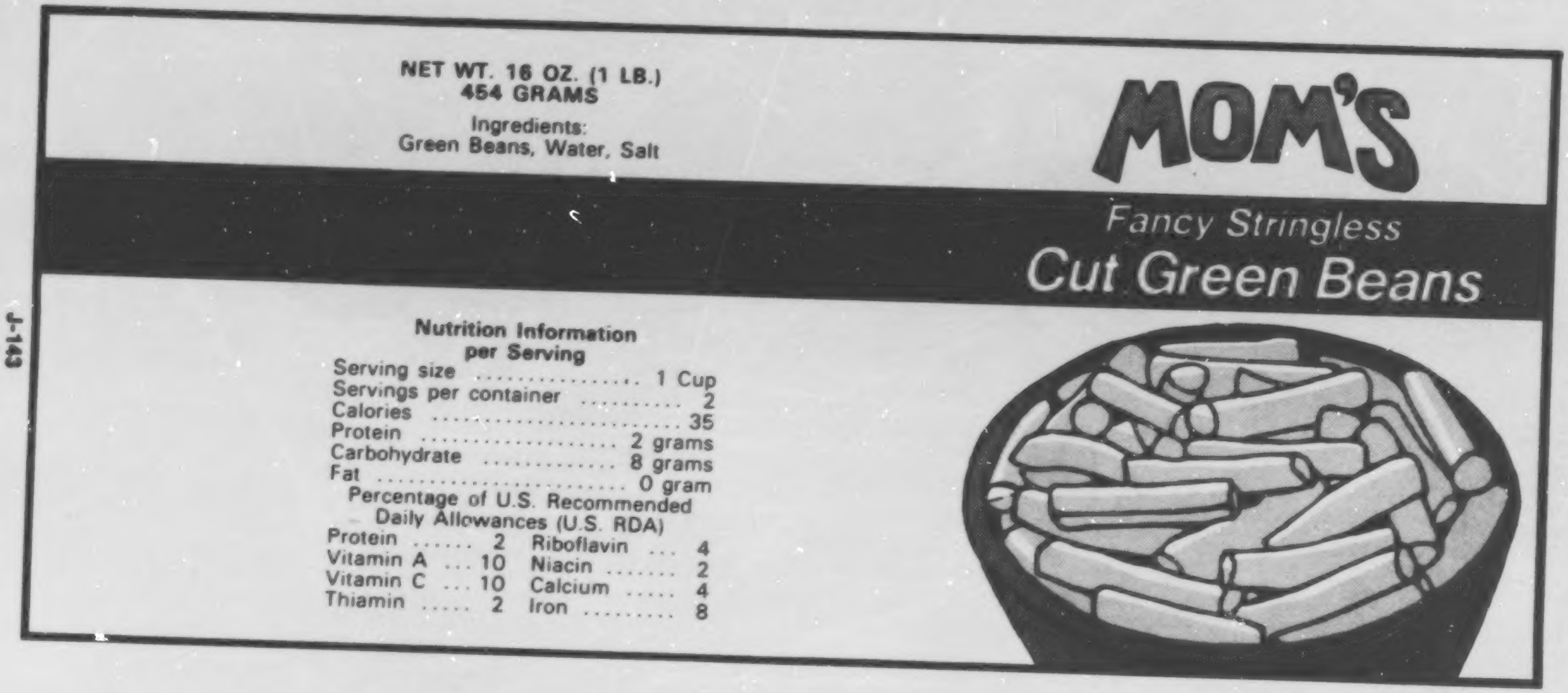
Nutrition Information per Serving

Serving size	1 Cup
Servings per container	2
Calories	70
Protein	2 grams
Carbohydrate	16 grams
Fat	0 grams

Percentage of U.S. Recommended Daily Allowances (U.S. RDA)

Protein	2	Niacin	8
Vitamin A	25	Calcium	8
Vitamin C	50	Iron	6
Thiamin	6	Phosphorus	4
Riboflavin	4	Magnesium	8

Label: Mom's Fancy Stringless Cut Green Beans



NET WT. 16 OZ. (1 LB.)
454 GRAMS

Ingredients:
Green Beans, Water, Salt

MOM'S

Fancy Stringless
Cut Green Beans

**Nutrition Information
per Serving**

Serving size	1 Cup
Servings per container	2
Calories	35
Protein	2 grams
Carbohydrate	8 grams
Fat	0 gram

Percentage of U.S. Recommended
Daily Allowances (U.S. RDA)

Protein	2	Riboflavin	4
Vitamin A	10	Niacin	2
Vitamin C	10	Calcium	4
Thiamin	2	Iron	8

J-143

Name ______________________

Validity Tester

	Yes	No	Information not available
Author's Credentials			
Does the author have training in nutrition from a recognized college or university?			
Does the author have experience in the area of human nutrition?			
Is the author presently working with a reliable agency or institution in the field of nutrition?			
Preface/Foreword			
Are there endorsements by professional nutrition or medical societies or professional nutritionists?			
Is the advice or assistance of nutrition experts and professionals acknowledged?			
Sources of Information			
Are there footnotes listing reliable and recognized nutrition or medical books and journals?			
Are recent references cited?			
Reviews			
Is the book on the acceptable list put out by a professional nutrition group such as the state or local dietetic association?			
Text			
Does the text of the book (1) make claims to cure medical conditions or claim an extraordinary nutrition breakthrough; (2) recommend megadoses of vitamin or mineral supplements; and (3) exaggerate virtues of individual foods or recommend diets of limited foods?			
Is the information consistent with the basic concepts of good nutrition and health?			

Name ______________________

Sources of Reliable Nutrition Information

Health Department, County or State: Public Health Nutritionist

Cooperative Extension County Office: Extension Home Economist

U.S. Food and Drug Administration: Consumer Affairs Officers

U.S. Department of Agriculture: Nutritionist or Food Scientist

State College or University—Human Nutrition, Food Science, Public Health or Nutrition Departments: Instructor or Professor of Nutrition

Local Professional Associations, such as the American Dietetic Association, American Heart Association, American Diabetes Association: Dietitians and Nutritionists

Local Hospitals: Dietitians and Nutritionists

State Department of Education—Child Nutrition and Food Distribution Division: Child Nutrition Consultants

Nutrition and Food Service Education Resource Center (Address: 321 Wallace Avenue, Vallejo, CA 94590; 707-557-1592)

Name ____________________

Evaluating Nutrition Information

1. Below are excerpts from the title pages of three nutrition books. Decide which book or books you would recommend as a reliable source of nutrition and circle your selection(s).

A.

Miracle Breakthrough!

HOW TO SHRINK YOUR FAT CELLS NOW

By I. M. Skinny of
Lose Weight Fast
Institute

Before:

After:

B.

Eating a Healthy Diet
For Teenagers

By L. Lee, R.D.,
Ph.D.

Instructor, University of California, Nutritional Sciences Department

Foreword by President of the American Dietetic Association

C.

The I Love Brownies Diet—Eating Brownies Can Help You Lose Weight!

By J. Hersey, member
C.L.G. (Chocolate
Lover's Guild)

2. For each title page, give two reasons for your decision to recommend or not recommend the book.

a. (1) ____________________

(2) ____________________

b. (1) ____________________

(2) ____________________

c. (1) ____________________

(2) ____________________

3. If you are unsure of the reliability of a nutrition book or article, what person or agency can you check with to find accurate information regarding nutrition? List two:

(1) ____________________

____

(2) ____________________

____

Name ______________________

Brand Names

Food product	Brand name
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

J-147

Name ______________________

Food Evaluation Form

	Food/Rating	Outstanding	Good	Poor
Food 1	Appearance			
	Taste			
	Texture			
Food 2	Appearance			
	Taste			
	Texture			
Food 3	Appearance			
	Taste			
	Texture			

Name ______________________

Supermarket Sweep

Food item	National brand	Store brand or generic food product

Name ____________________

Unit Pricing

Unit pricing is a way to do comparison shopping. Some supermarkets offer unit pricing as a service to shoppers.

To figure out unit pricing, ______ the cost of the product by the _______. This calculation allows the consumer to find out the most economical buy in the supermarket.

A.

Example: Brand X orange juice sells for \$.96 for 12 ounces.

$$\begin{array}{r} 8¢ \\ 12\text{ ounces}\ \overline{)\,96¢} \end{array} \qquad \frac{8¢}{\text{Cost per ounce}}$$

Brand Z orange juice sells for 85¢ for 12 ounces.

$$\begin{array}{r} ¢ \\ \overline{)\,85¢} \end{array} \qquad \frac{¢}{\text{Cost per ounce}}$$

The best buy is ___________

B.

	Cost	Ounces	Cost per ounce
Jiffy Peanut Butter	\$1.19	12	
Jiffy Peanut Butter	\$1.74	18	
Skippy Peanut Butter	\$1.35	12	
The best buy is			

Name ____________________

Saving Money

List five techniques that can be practiced inside the supermarket for saving money on the food bill, and describe each of the techniques.

1. ____________________

2. ____________________

3. ____________________

4. ____________________

5. ____________________

List two techniques that can be practiced outside the supermarket for saving money before going shopping or after the shopping is done. Describe what each technique involves.

1. ____________________

2. ____________________

The School Lunch Pattern

Components	Grades 4—12 Age nine and over (Group 4)	Grades 7—12 recommended quantities (Group 5)	Specific requirements
I. Meat or Meat Alternate A serving of one of the following or a combination to give an equivalent quantity:			
Lean meat, poultry, or fish (edible portion as served)	2 oz. (56 g)	3 oz. (84 g)	Must be served in the main dish and one other menu item. Textured vegetable protein products, cheese alternate products, and enriched macaroni with fortified protein may be used to meet part of the meat/meat alternate requirement.
Cheese	2 oz. (56 g)	3 oz. (84 g)	
Large egg(s)	1	1½	
Cooked dry beans or peas	½ cup (90 g)	¾ cup (135 g)	
Peanut butter	4 Tbsp. (64 g)	6 Tbsp. (96 g)	
II., III. Vegetable and/or fruit Two or more servings of vegetable or fruit or both to total ¾ cup	¾ cup (180 g)	¾ cup (180 g)	No more than one-half of the total requirement may be met with full-strength fruit or vegetable juice. Cooked dry beans or peas may be used as a meat alternate or as a vegetable but not as both in the same meal.
IV. Bread or Bread Alternate Servings of bread or bread alternate. A serving is: • 1 slice of whole-grain or enriched bread • A whole-grain or enriched biscuit, roll, muffin, and so forth • ½ cup of cooked whole-grain or enriched rice, macaroni, noodles, whole-grain or enriched pasta products or other cereal grains, such as bulgur or corn grits • A combination of any of the above	8 per week	10 per week	At least one serving of bread or an equivalent quantity of bread alternate must be served daily. Enriched macaroni with fortified protein may be used as a meat alternate or as a bread alternate but not as both in the same meal.
V. Milk A serving of fluid milk	½ pint (8 fl. oz.) (240 mL)	½ pint (8 fl. oz.) (240 mL)	At least one of the following forms of milk must be offered: • Unflavored low-fat milk • Unflavored skim milk • Unflavored buttermilk NOTE: This requirement does not prohibit offering other milks, such as whole milk or flavored milk, along with one or more of the above.

Offer Versus Serve Requirements

1. Every student is offered the following five food items:

a. Meat or meat alternate	2 oz.
b. Vegetable or fruit	¾ cup
c. Vegetable or fruit	¾ cup
d. Bread or bread alternate	1 per day, 8 per week
e. Milk, fresh fluid	1 cup (½ pint)

2. The student is not required to accept any food item he or she does not intend to consume. The student cannot be required to select any specific food.
3. The meal is reimbursable if a minimum of three of the five food items are selected by the student.
4. The student should be encouraged to accept all five of the food items.
5. The lunch is priced as a unit. The student who selects three items pays the same amount as the student who selects four or five food items.
6. The local school may establish a policy which allows or requires schools to offer students a small portion of any of the food items declined by the student.

State and Federal Regulations for School Sales

I. Federal Regulations

The following foods are of minimal nutritional value and cannot be sold from the beginning of the school day (defined as after 12:01 a.m.) until after the last lunch period (defined as the time when students return to their classes.)

(Foods sold in the teachers' lounges are exempted as long as students do not have access to the foods.)

This rule affects all foods sold on the school premises through vending machines, ROP programs, student stores, student or school organizations, and as a la carte items in the cafeteria.

Foods not on the list may be sold prior to the end of the last lunch period if the proceeds accrue to a school organization or school approved student organization. (The PTA is not considered a school organization under this provision.)

This regulation applies to all public and private schools participating in the National School Lunch Program, School Breakfast Program, or Commodity Program.

The foods of minimal nutritional value are as follows:

a. Soda water and sodas (all carbonated beverages) as defined by the Food and Drug Administration's regulations, except that artificial sweeteners are ingredients that are included in this definition.

b. Water ices as defined by the Food and Drug Administration's regulations, except that water ices which contain fruit or fruit juices are not included in this definition.

c. Chewing gum—flavored products from natural or synthetic gums and other ingredients which form an insoluble mass for chewing.

d. Certain candies—processed foods made predominantly from sweeteners or artificial sweeteners with a variety of minor ingredients, such as the following:

   1. Hard candy. A product made predominantly from sugar (sucrose) and corn syrup. It may be flavored and colored, is characterized by a hard, brittle texture, and includes such items as sour balls, fruit balls, candy sticks, lollipops, starlight mints, after-dinner mints, sugar wafers, rock candy, cinnamon candies, breath mints, jaw breakers, and cough drops.
   2. Marshmallow candies. An aerated confection composed of sugar, corn syrup, invert sugar, 20 percent water, and gelatin or egg whites to which flavors and colors may be added.
   3. Jellies and gums. A mixture of carbohydrates which are combined to form a stable gelatinous system of jelly-like character are generally flavored and colored. Included are gum drops, jelly beans, and jellied and fruit-flavored slices.
   4. Fondant. A product consisting of microscopic-sized sugar crystals which are separated by a thin film of sugar and/or invert sugar in solution, such as candy corn and soft mints.
   5. Licorice. A product made mainly from sugar and corn syrup which is flavored with an extract made from the licorice root.
   6. Spun candy. A product that is made from sugar that has been boiled at a high temperature and spun at a high speed in a special machine.

7. Candy-coated popcorn. Popcorn which is coated with a mixture made predominantly from sugar and corn syrup.

II. State Requirements (Mandated in the state *Education Code*)

Fifty percent of all foods offered for sale each school day at any site by any organization or group (students, parents, or teachers) during regular school hours shall be selected from the list of nutritious foods outlined below.

Food items reimbursed under the school nutrition programs are not included in the 50 percent calculation. A la carte items sold in the school cafeteria are included in the 50 percent calculation.

A food item is defined as each separate kind of food offered through, for example, vending machines, direct sales, cafeteria sales, and sales at snack bars.

This legislation applies to all public schools in California. Foods not included on the following list are considered nonnutritious foods:

Food groups	Specific food items	Comments
Milk and Dairy Products	Milk, cheese, yogurt, frozen yogurt, ice cream	
Juices	Fruit juices, vegetable juices	Must contain 50 percent or more full-strength fruit juice
	Fruit nectars	Must contain 35 percent or more full-strength fruit nectars
Fruits/Vegetables	Fresh fruits and vegetables, frozen fruits and vegetables, canned fruits and vegetables, and dried fruits and vegetables	
Nuts	Nuts, seeds, and nut butters	
Grain Products	Crackers, bread sticks, tortillas, pizza, pretzels, bagels, muffins, and popcorn	Nonconfection grain products as defined by the regulations of the U.S. Food and Drug Administration
Meats	Meat, poultry, and fish: beef jerky, tacos, meat turnovers, pizza, chili, and sandwiches	
Legumes	Legumes and legume products: bean burritos, chili beans, bean dip, roasted soy beans, and soups	
School Lunch Meal Components	Any foods which would qualify as one of the required food components of the school lunch meal pattern	

III. Additional State Requirements Concerning the Sale of Food by Student Organizations (Mandated in the state *Education Code)*

The school governing board may approve the sale of food by student organizations if only one organization each day sells no more than three types of food or beverage items which (1) are not prepared on the premises; and (2) are not sold in the food service program that day. In addition, any number of organizations can have four days per year per school where any number of items are not prepared on the premises and not sold in the food service program that day.

This regulation includes sales through vending machines if any portion of the proceeds are shared by a student organization.

This regulation applies to all public junior high schools and high schools in California.

Universal Product Code

The Universal Product Code (UPC) is a new marketing technique that store officials claim will save time and money for consumers and for the supermarket industry. The UPC is a ten digit numbering system for identifying items sold by grocery stores. The typical UPC symbol is a series of lines of different width with visible numbers at the bottom of the symbol:

75470 08702

The UPC identifies each product with its own computer-readable label that distinguishes it from all other products. It then becomes a new price tag and allows for the elimination of price markings on the package. However, the prices will be displayed on the grocery shelves, allowing the shopper to select the product and compare prices without examining the individual packages. On reaching the checkout counter with the purchases, shoppers will find the checker using an electronic cash register. The checker will move the packages across a small "scanner" (a laser-beam device to scan or read the UPC symbol on the product) that is built into the checkout counter. In a fraction of a second, the scanner will translate the UPC bar symbol to the UPC code number; transmit it to the store's minicomputer file, where the current product price unit price, tax, and other information are stored; and flash the information back to the register for both the customer and the checker to see. Simultaneously, this price is printed on the customer's receipt tape along with the product's name and department. If any of the selected packages are not coded, the checker will enter those items on the cash register in the conventional manner.

The benefits to the manufacturers are mostly competitive. That is, they know that an automated supermarket will more readily accept their products if they are marked with the UPC. In addition, they will know from the system which stores are selling certain products or where the profit margin is greatest.

Benefits to the retailer will include improved control of inventory and product movement information, improved ordering and reordering of items, and fewer instances of items being out of stock. There will be better overall management because the system will allow retailers to study product success and to accurately predict sales and labor needs.

Because of checker mistakes, stores do not collect from the customers all of the city and state taxes for taxable items. The electronic register will automatically compute and collect the correct tax and thereby eliminate this kind of loss.

From the consumer's point of view, improvement of checkout counter efficiency will be the greatest benefit. Because of the speed of the automated checkout scanner and computer, the consumer's purchases will be recorded and bagged much faster. In addition, consumers will receive a detailed, itemized cash register tape, which will include both the price and name of each item purchased. They will also be more certain of paying the right price for purchases because of the elimination of human error at the cash register.

But there is growing opposition from consumer groups because, under the present plans for this new system, industry will eliminate prices on nearly all the items, replacing them with only a price marked on the shelf. They feel that the removal of the individual prices in favor of the shelf price may be a dubious practice, since many stores cannot keep unit pricing labels up to date now. Since it is generally known by the supermarket industry that consumers rate price-marked items the number one feature for shopping in a store, industry will have to find some way of handling this issue to win consumer acceptance and to prevent any future controversy.

A Not So Super Market

Sara was having a hectic day. It was the first day of Easter vacation, and she had agreed to babysit three-year-old Rita, who lives next door, so that Rita's mom could run in a minimarathon. Sara's own little sister, Sandy, and Rita were about the same age and usually got into everything!

As Sara prepared to pick up Rita, the telephone rang. Her friend from high school wanted to go out to lunch. Since Sara had the two small children, she asked her friend to join her at home for lunch. However, Sara had to make a quick trip to the supermarket with the two small children, which was something she did not really want to do!

The trip was as frustrating as she had anticipated. When they entered the store, they encountered a huge, colorful display of Easter candy, bunnies, baskets, the works. Rita and Sandy ran to the display and began pleading: "Can we have some? Pleeeeeeeze?"

After Sara pulled the two little girls away from that dazzling display, they ran for the cookies, which were placed right on the main aisle at the children's eye level. Each grabbed a bag of her favorite cookies and loudly demanded the cookies.

In addition to these frustrations, Sara could not find the advertised special she had read about that she would need to make a tasty, easy-to-prepare lunch for her guest. She walked up and down the aisles in search of the special, tugging the two small girls along as they pleaded for and demanded toys, breakfast cereals, candy, and such, all conspicuously placed at their eye level.

She never did find the special. Instead she bought a frozen pizza that was on display and for which she had a coupon. She later regretted her purchase because she found that the pizza actually cost more than the special that she had planned to purchase, even with the coupon.

The checkout counter was the final straw. She was in a hurry, the line was long, and the little girls demanded some chewing gum that was prominently displayed on the counter.

Sara finally gave in and bought each girl a pack of gum. She also bought herself a magazine that she had been leafing through while in line, which she ended up throwing away unread two weeks later.

What a frustrating trip! On the way home, Sara wondered, "Why can't markets be organized for consumer convenience rather than for selling their products?"

P.S. Sara's lunch visit with her friend was a success!

Supermarket Merchandising Techniques

1. *Advertising products as specials which do not really save the consumer any money.* For example, a store advertises a product as a special for 98 cents when that product has always sold for 98 cents. This is done in the hope that people will think they are saving money because it is a special and buy it without checking the price.
2. *Offering coupons that save the consumer money only on very expensive new products.* For example, a store offers a coupon that will save the consumer 5 cents on some new canned beans that sell for 79 cents while they have other varieties of the same size of canned beans on the shelf for 63 cents—in the hope that the consumer will think they are getting a good buy by saving 5 cents!
3. *Placing attractive product displays only in "dead" areas of the store.* This is done to get shoppers to spend more time in those areas in the hope that they will also buy some other products on the shelves in those areas.
4. *Placing children's cereals and cookies on shelves at children's eye level.* This is done in the hope that children accompanying their parents shopping will take these products off the shelves and talk their parents into buying them.
5. *Placing high-profit products in high traffic areas of the store.* This is done in the hope that the more people that see these products, the more people will buy them.
6. *Packaging meat in containers that make it impossible for the consumer to inspect the underside of the meat for fat content or freshness.* This enables the supermarket to put the best side of the meat up so poorer cuts of meat will also sell for better prices.
7. *Placing, candy, gum, magazines, and so on near the cash register to promote impulse buying.* This is done in hope that as people wait in the checkout line, they will see these products and will buy them.
8. *Placing higher-priced products on shelves at adult's eye level.* This is done because they hope the consumer will buy the first items they see rather than look at the bottom shelves for lower-priced items of the same product.
9. *Placing advertised leader specials at locations in the store that are hard for the consumer to find.* This is done in the hope that the advertised leader specials (on which the store may be losing money) will bring people into the store but that the people will forget about the specials or give up trying to find them.
10. *Prepackaging fruits or vegetables so that it is impossible for the consumer to select the freshest or most attractive product or to buy the exact quantity needed.* This is done both to reduce the quantity of fruit or vegetables a supermarket is unable to sell and to simplify its bookkeeping.

Name ______________________

Supermarket Merchandising Techniques

Do like	Do not care	Do not like	The technique
1.			Advertising products as specials which do not really save the consumer any money
2.			Offering coupons that save the consumer money only on very expensive new products
3.			Placing attractive product displays only in "dead" areas of the store
4.			Placing children's cereals and cookies on shelves at children's eye level
5.			Placing high-cost, high-profit products in high traffic areas of the store
6.			Packaging meat in containers that make it impossible for the consumer to inspect the underside of the meat for fat content or freshness
7.			Placing candy, gum, magazines, and so on near the cash register to promote impulse buying
8.			Placing higher-priced products on shelves at adult's eye level
9.			Placing advertised leader specials at locations in the store so that they are hard for the consumer to find
10.			Prepackaging fruits or vegetables so it is impossible for the consumer to select the freshest or undamaged product or to buy the exact quantity needed

Name ____________________

Values About Supermarket Merchandising Techniques

One of my values about supermarket merchandising is that:

1. Advertised specials are offered that are a true cost-saving special buy for the consumer.
2. Money-saving coupons are offered on commonly used products.
3. Attractive product displays are placed at locations throughout the store rather than only in "dead" areas.
4. Children's cereals, cookies, and the like are placed on shelves out of the reach of children.
5. Cost-saving products are placed in high traffic areas of the store so that consumers can find them easily.
6. Meat is packaged in clear containers so that both sides may be inspected before the meat is purchased.
7. Candy, gum, magazines, and such are placed on shelves in aisles rather than by the check-out lines.
8. Cost-saving products are placed at eye level rather than on bottom shelves.
9. Advertised leader specials are made easy for the consumer to find.
10. Fruits and vegetables are sold unpackaged so the consumer can select each item he or she wants and can purchase only the quantity desired.

Name ______________________

Which Market Do You Choose?

The following are brief descriptions of the three markets in your new neighborhood. Read through these descriptions and decide which market you will shop at regularly. Circle the market you choose: A, B, or C. Also, put a star by each of the things you especially like about that market.

Market A

It is located two blocks from your home. (Value: It is convenient to get to.)

The people who work there smile at you, say, "Hello," and are nice to you. (Value: It has friendly employees.)

The fruit is not always fresh and is in limited supply.

The store has lower prices for most of their items as compared to other markets in the neighborhood. (Value: It has economical prices.)

Parking spaces are usually hard to find because of several other stores in the area.

The shopping carts are hard to find, and many of them are broken.

The store has very narrow and cluttered aisles.

The store has lots of different kinds of good meat. (Value: It has a wide selection of meat.)

The store offers trading stamps. (Value: It gives you something extra for your money.)

$1.29
$3.29
$.89
$1.59
$1.97
$3.36

Market B

You never have to wait in the checkout line. (Value: It gives fast service.)

There are always lots of different kinds of vegetables and fruits. (Value: It has a wide selection of fruits and vegetables.)

There are always many good buys in the meat department. (Value: It has good bargains in meat.)

There are always lots of good, free parking spaces close to the store entrance. (Value: It has convenient parking.)

There are plenty of shopping carts. (Value: It has shopping carts available.)

It is eight miles from your house.

Your neighbors have gotten sour milk there on occasion.

There are lots of different kinds of brand name foods in both the canned and frozen food departments. (Value: It has a wide selection of canned and frozen foods.)

It has a gourmet food department. (Value: It has unique and unusual foods.)

It has a delicatessen with delicious prepared foods. (Value: It has convenient ready-to-eat foods.)

There are frequent storewide sales. (Value: It offers bargain items for shoppers.)

FRES
PRODUCE

Market C

There are no shopping carts.

There is little variety in the foods available; only one or two brand names are sold at the store. (Value: It is easy to decide which brand name food you want to buy.)

There are wide aisles between the rows of food. (Value: It has easy access to the foods.)

They give free balloons and lollipops to the young kids. (Value: It gives you something extra for your money.)

They sell hot sandwiches, coffee, doughnuts, and cold drinks. (Value: It has ready-to-eat foods.)

You can have your car gas tank filled while you shop. (Value: It provides conveniences for their customers.)

You can win $500 in the weekly Super Shopper Sweepstakes. (Value: It gives you something extra for your money.)

Only prepackaged meats, canned goods, and frozen foods are sold.

Only smaller sizes of packaged food items are available. (Value: Small families need not waste food.)

Most people can do all of their shopping and be out of the store in ten minutes. (Value: It is convenient to shop there.)

Some of my values about a grocery store are that:

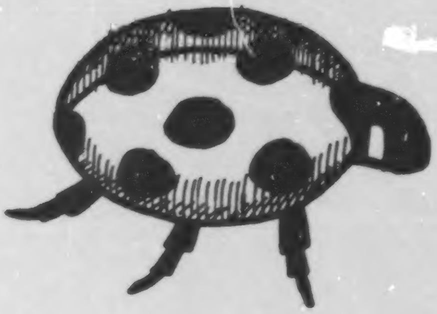
____,

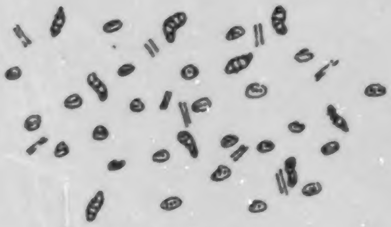
____,

and ____.

O,O-DIETHYLO-P-NITROPHENYL
TRIOPHOSPHATE

1,2,4,5,6,7,8,8-OCTACHLORO-2,3,3a, 4,7,7a - HEXAHYDRO-4, 7-METHANOINDENE





Pesticide

A pesticide is an agent used to kill pests. The following terms are used under this broad category:

Insecticides—To kill insects
Rodenticides—To kill rodents
Fungicides—To kill fungus
Miticides—To kill mites
Herbicides—To kill nuisance plants

Pest Control

Parathion

(Nonpersistent Pesticide)

A highly poisonous synthetic chemical that breaks down into nontoxic material fairly quickly

Chlorodane

(Persistent Pesticide)

A synthetic compound that acts as nerve poison

Accumulates and remains in the ecosystem with little change for many years

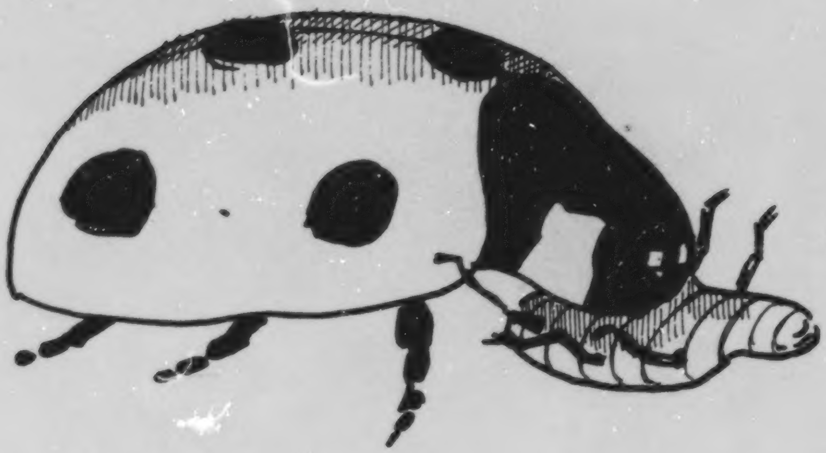
Ladybird Beetle

A natural predator

Selected Microbes

Harmless to animal and plant life, but infects pests with deadly diseases

Biological Pest Control



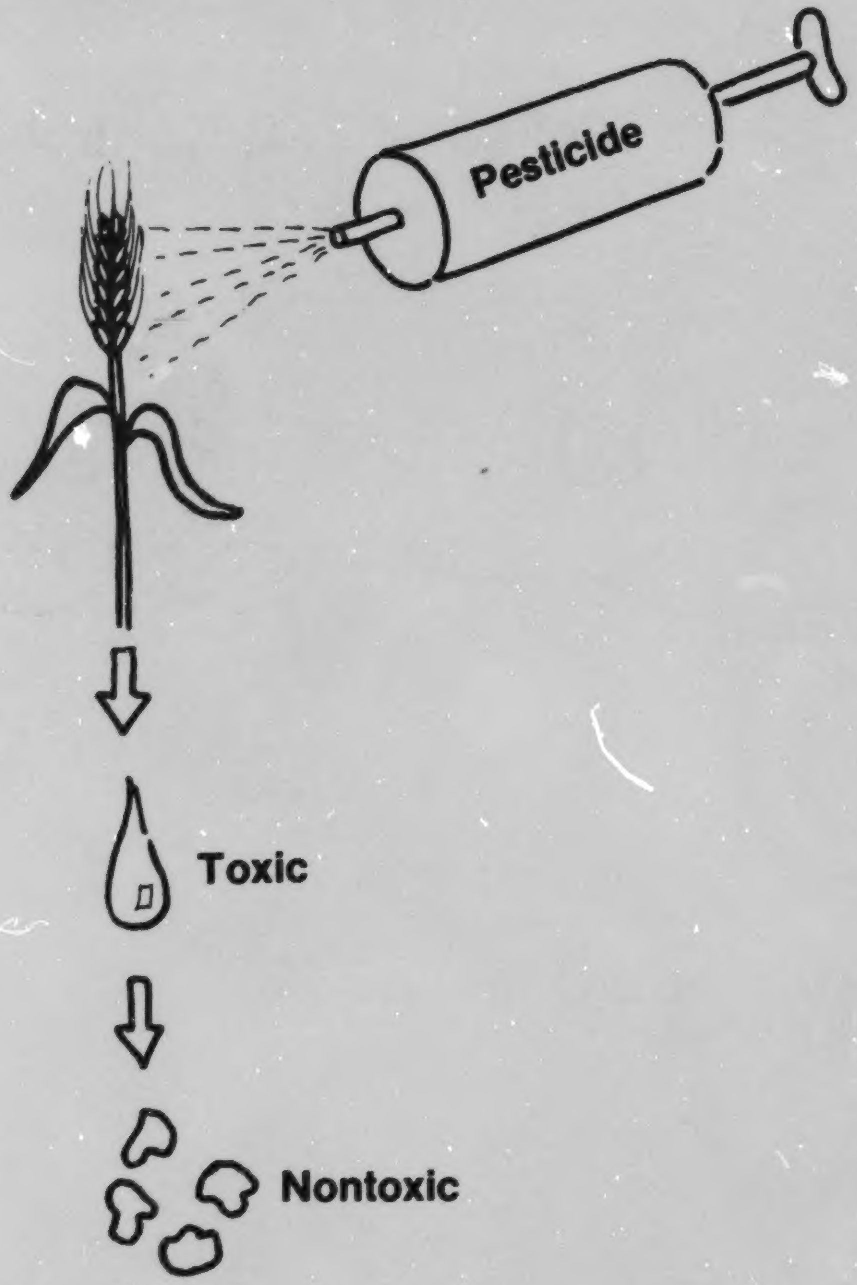
One Advantage

*Predators that feed on the insect pest are introduced and there are no toxic residues left on food supplies.

One Disadvantage

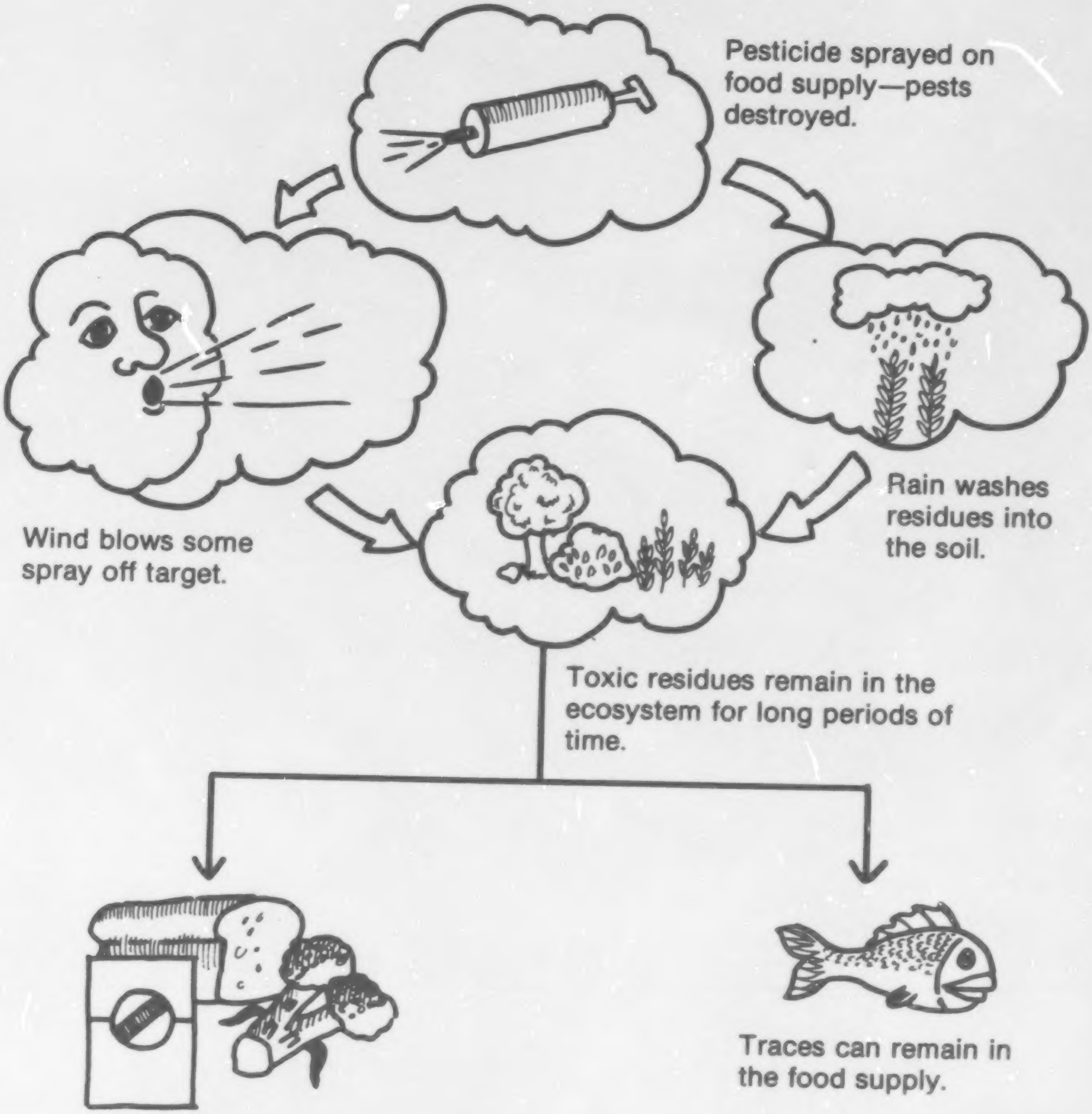
*With fewer pests to feed on, food becomes scarce. The predators produce smaller litters/broods.

Nonpersistent Pesticides


Pesticide
Toxic
Nontoxic

(A) Break down into nontoxic materials fairly quickly
(B) Have less total effect on the environment
(C) Must be used with caution because they can initially be highly toxic to many when being applied

Persistent Pesticides



Pesticide sprayed on food supply—pests destroyed.

Wind blows some spray off target.

Rain washes residues into the soil.

Toxic residues remain in the ecosystem for long periods of time.

Harmless members of the ecosystem can be destroyed.

Traces can remain in the food supply.

Newspaper Article

Man Sues Pesticide Manufacturer

Juan Villafana, 55, a farm worker in a small community outside the agricultural beltline near Fresno, California, is suing a well-known pesticide manufacturer for $3 million. The distraught Villafana claims his nervous system is deteriorating due to pesticide poisoning. Three doctors have examined Villafana and will support his claim in court.

The pesticide manufacturer being sued has told reporters that he or she will supply his or her own medical experts to discount Villafana's charges that chemicals have caused the deterioration. Other farm workers and community members in the small community are upset about this pesticide situation, and their concern has led to a town council meeting to discuss the issue of pesticide use.

Reasons for Use of Pesticides

1. World population growth requires more food. Pests can reduce the food supply.
2. Pesticides are required for production of familiar foods at current prices.
3. Today's specialization in farming (single crop farming) has created a banquet table for insects that pour into the fields in such prodigious numbers that the only way to cope with them is by chemical means.
4. Increasing the consumable yield from crops on fast-disappearing agricultural land.

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Reasons Against Use of Pesticides

1. Pesticides are obviously toxic compounds that are often used and abused.
2. Pests can develop a resistance to them, so new ones have to be developed (at an average cost of $7.4 million).
3. Effectiveness is temporary, and repeated applications are required.
4. Residues can be permanent in the harvested crops.
5. Pesticides can disrupt natural controls, with greater pest outbreaks subsequently developing.
6. Toxic compounds can harm nontarget organisms (man, animals, bees, birds).
7. Residues can increase progressively in farm animals and other consumers of contaminated foods.
8. Residues may be "indestructible" and accumulate in the environment.

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Alternatives to Use of Pesticides

1. Do nothing and invite national ruin.
2. Convert to a program of integrated insect control to compensate for humans tampering with the balance of nature through agricultural practices. Program involves:
    a. Preserving and raising natural predators and parasites which are harmless to humans, animals, and crops
    b. Raising microbes, which are harmless to animal and plant life, to infect pests with deadly diseases
    c. Developing specific viruses for selective infection of insects
    d. Preventing insects from reproducing by altering their sex lives with radiation, chemosterilants, or hormones that arrest development
    e. Improving plant resistance to infestation by genetic transformation

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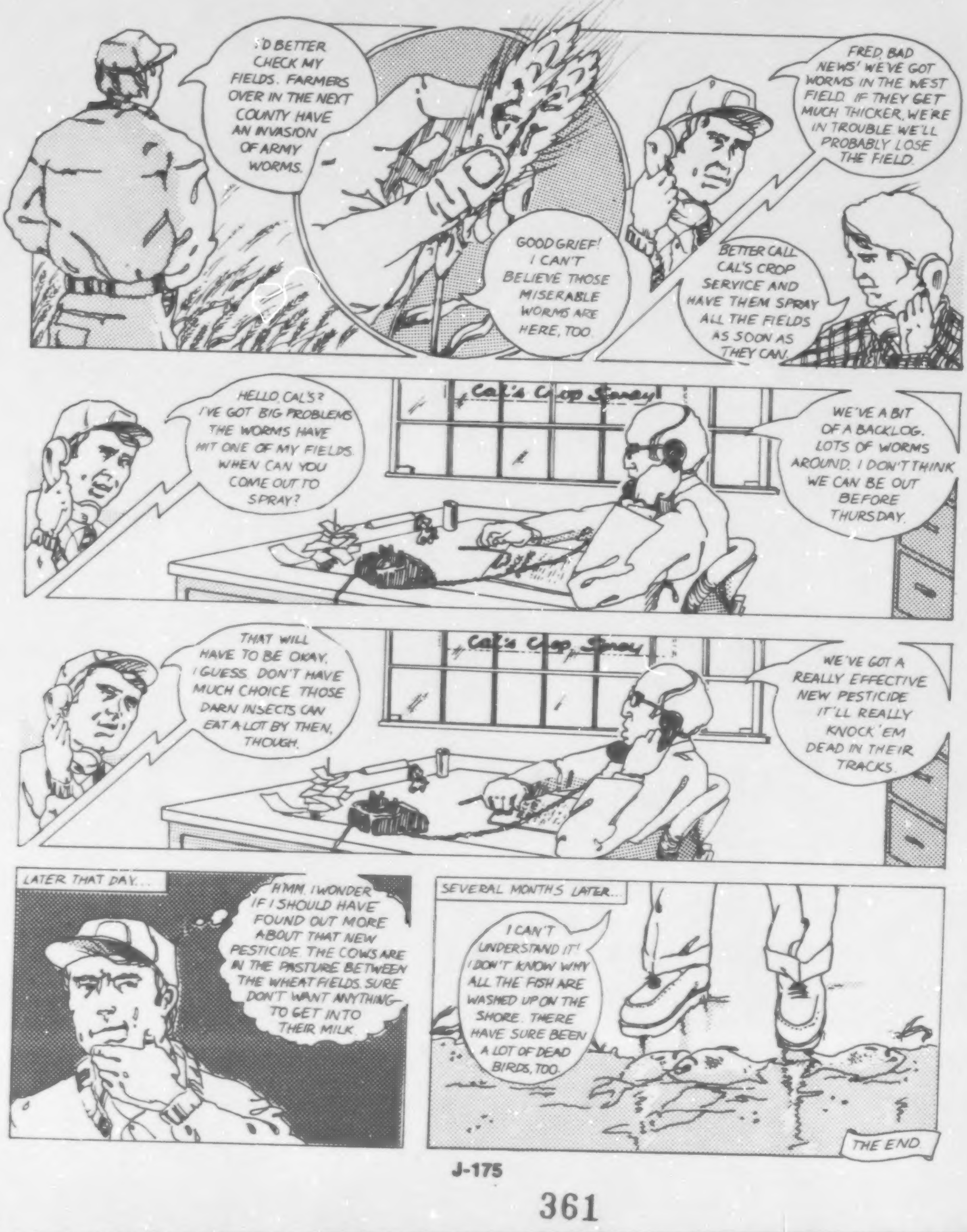
The Pesticide Dilemma

Harvest time for the wheat growers is fast approaching. The farmers are looking forward to a bountiful harvest because stockpiles of wheat have been almost depleted. Suddenly, farmers are becoming alarmed. An army of worms is invading the wheat fields and devouring the kernels of grain. All that remains when the insects leave one field and head for the next one are stripped and ravaged stems of the wheat plants.


I'D BETTER CHECK MY FIELDS. FARMERS OVER IN THE NEXT COUNTY HAVE AN INVASION OF ARMY WORMS.
GOOD GRIEF! I CAN'T BELIEVE THOSE MISERABLE WORMS ARE HERE, TOO.
FRED, BAD NEWS! WE'VE GOT WORMS IN THE WEST FIELD. IF THEY GET MUCH THICKER, WE'RE IN TROUBLE. WE'LL PROBABLY LOSE THE FIELD.
BETTER CALL CAL'S CROP SERVICE AND HAVE THEM SPRAY ALL THE FIELDS AS SOON AS THEY CAN.
Cal's Crop Spray
HELLO, CAL'S? I'VE GOT BIG PROBLEMS. THE WORMS HAVE HIT ONE OF MY FIELDS. WHEN CAN YOU COME OUT TO SPRAY?
WE'VE A BIT OF A BACKLOG. LOTS OF WORMS AROUND. I DON'T THINK WE CAN BE OUT BEFORE THURSDAY.
Cal's Crop Spray
THAT WILL HAVE TO BE OKAY, I GUESS. DON'T HAVE MUCH CHOICE. THOSE DARN INSECTS CAN EAT A LOT BY THEN, THOUGH.
WE'VE GOT A REALLY EFFECTIVE NEW PESTICIDE. IT'LL REALLY KNOCK 'EM DEAD IN THEIR TRACKS.
LATER THAT DAY...
HMM, I WONDER IF I SHOULD HAVE FOUND OUT MORE ABOUT THAT NEW PESTICIDE. THE COWS ARE IN THE PASTURE BETWEEN THE WHEAT FIELDS. SURE DON'T WANT ANYTHING TO GET INTO THEIR MILK.
SEVERAL MONTHS LATER...
I CAN'T UNDERSTAND IT! I DON'T KNOW WHY ALL THE FISH ARE WASHED UP ON THE SHORE. THERE HAVE SURE BEEN A LOT OF DEAD BIRDS, TOO.
THE END

BEST COPY AVAILA

Pesticide Information Sheet

1. Pesticides are chemicals used to fight insects and diseases that attack crops. The use of pesticides can increase food crop yield since less food is lost to insect damage and disease.
2. A current pesticide issue is the cost to society of using pesticides versus the benefits gained.
3. Some chemical pesticides kill helpful as well as harmful insects.
4. Some pesticides may also leave toxic residues in food which may be hazardous to human health.
5. It has not yet been fully determined to what extent pesticides interact with one another and with nutrients to the possible harm of humans.
6. Pesticides developed to kill new strains of crop pests are more potent than the older pesticides and are potentially more dangerous to the elements of the food chain.
7. Pesticides are incidental food additives that get into food by accident and are not listed on food labels.
8. Glossary:

Biological control—use of natural enemies to regulate pest population.

Cultural control--control of pests by plowing under crop residues, pruning and destruction of infected tree branches, rotating crops, and so on.

Ecosystem—a complex of the ecological community and environment forming a functioning whole in nature.

Host—an organism that serves as the food source for a predator or parasite.

Integrated control—management of pest populations by the use of natural mortality factors in conjunction with knowledge of insect life cycle to arrest development of pests.

Natural control—use of physical and biological factors in the environment to control pests.

Natural enemy—an organism that causes the premature death of another organism.

Nonpersistent pesticide—a chemical that breaks down in the ecosystem into nontoxic materials quickly. These pesticides can be highly poisonous initially.

Parasite—an organism that lives and feeds on a larger host.

Persistent pesticide—a chemical used to kill crop pests that remains in the ecosystem with little change for many years.

Pest—an organism that can be potentially harmful to the food supply.

Pesticide resistance—the effect on pests that, through repeated exposure to chemical pesticides, results in a genetically selected tolerance to pesticides.

Predator—an insect or animal that feeds upon other insects or animals that are weaker and/or smaller than itself.

Effects of Pesticides

1. How do pesticides affect the availability and quality of food?
   a. More food is grown in bad weather.
   b. Less food is destroyed by bugs.
   c. Less food is grown per acre.
   d. More spoiled food goes to market.

2. How can uncontrolled use of pesticides be dangerous?
   a. Pesticides may be eaten along with food.
   b. Pesticides are artificial rather than natural chemicals.
   c. Pesticides decrease the nutritional value of food.
   d. Pesticides increase the need for additives.

3. A persistent pesticide:
   a. Will not spread widely throughout the environment
   b. Is dangerous only because it is irritating to people with allergies
   c. Remains in the ecosystem for long periods of time with little change
   d. Breaks down into nontoxic materials quickly

4. One advantage of using pesticides would be to:
   a. Increase food crop yield.
   b. Increase the nutritional content of food.
   c. Clear the immediate environment of insects.
   d. Leave toxic residues on food.

5. One disadvantage of using pesticides would be:
   a. Decreasing the nutritional content of the food
   b. Clearing the immediate environment of insects
   c. Increasing food crop yield
   d. Killing harmful as well as helpful insects

Name ______________________

Pesticide Problems

1. Unscramble the following terms:

Pests
Insects
Residue
Predator
Pesticide
Fungicide
Herbicides
Food Supply
Natural Control
Biological Control

a. editepsic ______________________
b. teniscs ______________________
c. edfgnciui ______________________
d. siderhibe ______________________
e. sspet ______________________
f. srediue ______________________
g. dofo plypus ______________________
h. dortepar ______________________
i. latruna lrtoonc ______________________
j. ogibcolail tcnolor ______________________

2. What are four nontarget organisms that pesticides can harm?

____

____

3. How would the banning of the use of pesticides affect our food supply? (List two effects.)

____

____

4. If there was no regulation of the use of pesticides, what would the result be? (List two results.)

____

____

5. List two alternatives to the use of pesticides.

____

____

6. What are pesticides?

____

____

7. Matching exercise.

Match the terms with the statements below.

a. Pesticide resistance
b. Natural control
c. Biological control
d. Pests

(1) ____ Using physical and biological factors in the environment to control pests
(2) ____ An organism that can be potentially harmful to the human being's food supply
(3) ____ Pests that through repeated exposure to chemical pesticides have a genetically selected tolerance to pesticides
(4) ____ Use of natural enemies to regulate pest populations

8. Extra credit

Try to name as many pesticides as you can that you can find in your home.

Sally's Diner

Participants

2 customers
1 food service person named Sally

Props needed

1 table
2 chairs
2 place settings (plates, glasses filled with water, spoons, forks, knives, and napkins)
Pencil and pad
2 menus or facsimile
Band aid

Plot

1. Two customers come into the diner and are seated.
2. Sally, the food service person, walks over to the table to greet the customers and to give them menus.
3. Sally sneezes and partially covers her mouth with her hand (one finger of the hand has a large bandage). Sally tells the customers she will be back shortly to take their orders.
4. The customers study the menus. Sally sets the table, handling flatware by the eating surface and carrying glasses by holding them around the rims with her fingers inside the glasses.
5. Sally takes the pencil from behind her ear to write the order.
6. Sally scratches her head while writing the customers' orders.

Sammy's Diner

Participants

2 customers
1 food service person named Sammy

Props needed

1 table
2 chairs
2 place settings (plates, glasses filled with water, spoons, forks, knives, and napkins)
Pencil and pad
2 menus or facsimile
Sink or bucket of water and a bar of soap

Plot

1. Two customers come into the diner and are seated.
2. Sammy, the food service person, walks over to greet the customers and to give them menus.
3. Sammy covers his mouth as he coughs.
4. Sammy tells the customers he will be back shortly to take their orders.
5. Sammy goes to the sink and washes his hands with hot water and soap.
6. Sammy sets the table as customers study the menu. Flatware is handled by the handles, and the glasses are carried with the hands under the bottom of the glass.
7. Sammy takes the customers' orders.

Certificate of Induction

____

(Name of student)

Has been duly selected to participate in the corps to wipe out food-borne illness. Your charge is to recognize the enemy and complete campaigns to help protect the public from food-borne illness. As each task is completed, your platoon leader will check off the task.

"Meet the Enemy" ☐ ______________
"Sanitation Rules Directive" ☐ ______________
"Consciousness Campaign" ☐ ______________
"Dominance Drill" ☐ ______________
"Discharge Document" ☐ ______________

____

(Commander-in-Chief)

Meet the Enemy

Bacteria may be present in any food. They are everywhere in the environment. All persons who handle food must be aware of conditions and organisms that produce food-borne illnesses.

Illness	Cause	Symptoms	Foods involved	Control
Salmonella	Found in raw animal products. Multiplies at temperatures between 40° and 140° F. (4° and 60° C).	12 to 24 hours after eating, food contaminated by salmonella organism. Nausea, vomiting, diarrhea, and abdominal cramps.	Meat, poultry, egg products (custards, egg salad, meringue)	Wash hands before handling food. Cook foods thoroughly. No infected person should handle foods. Foods should stand at room temperature for no more than an hour; store foods below 40° F.
Staphylococcus	Found in nose, hair, throat, skin, and infected cuts. When bacteria multiply, a toxin is produced which is not destroyed by heat.	2 to 6 hours after eating poisonous food. Nausea, vomiting, diarrhea, and abdominal cramps.	Pastries, custards, salads, sandwiches, chicken salad, prepared foods containing mayonnaise	Wash hands well: cook foods to 140° F.; refrigerate at 40° F. Do not handle foods if wounds or sores are on the hands. Cover mouth when coughing or sneezing.
Clostridium botulinum	Grows and produces toxin in sealed jars and cans that are improperly processed.	Signs of botulism poisoning begin 12 to 36 hours after eating the food. Double vision, nausea, vomiting, inability to swallow, speech difficulty, and progressive paralysis of the respiratory system.	Home-canned and commercially canned foods	Follow accepted canning procedures for low-acid foods. Throw out suspected foods without tasting. Thoroughly cook canned foods.
Clostridium perfringens	Found in soil, dust, and raw animal products. Multiplies at temperatures between 40° and 140° F. (4° and 60° C).	4 to 22 hours; usually 22 hours. Diarrhea, abdominal pain, and nausea without vomiting.	Gravies, meat pies, casseroles, stews, poultry dishes	Cook foods thoroughly. Promptly refrigerate cooked food to prevent growth of bacteria that survive cooking temperatures. Do not hold foods at temperatures between 45° and 140° F. (7° and 60° C) for long periods of time.

Sanitation Rules Directive

Everyone should practice good sanitation techniques. All persons who handle food should know these four basic rules which can be used as guidelines in the handling and serving of food.

I. ***Keep food clean.*** Strict cleanliness is very important when handling food. Food service personnel should always work with clean hands, fingernails, and hair. Clean clothing should be worn. Personnel with infectious diseases or skin infections should be discouraged from handling food.

All utensils and equipment used in the preparation and/or service of food should be cleaned and sanitized thoroughly after being used. After it is cleaned, all equipment should be handled and stored properly to prevent contamination.

Foods should be kept covered as much as possible during preparation, serving, and storing.

Food handling should be kept at a minimum. Use proper utensils and equipment instead of the hands.

II. ***Keep time in danger zone short.*** The danger zone for bacterial growth is between 40°and 140° F. (4° and 60° C). Foods should be held in this temperature range only for short periods of time during preparation and serving and not longer than one to two hours. Certain foods are more likely to be contaminated during these in-between temperatures than others. Turkey or other poultry dressings should not be at temperatures in the danger zone for more than one hour. Leftover poultry meat, dressing, and gravy should be refrigerated immediately. Sandwich fillings, salads mixed with mayonnaise, and cooked hams are examples of foods which should not stand at room temperature more than four hours.

III. ***Keep cold food cold.*** Bacteria that cause food poisoning are not killed by low temperatures. Their growth can be slowed or stopped. Temperatures of 32° to 40° F. (0° to 4° C) prevent bacterial multiplication and are safe for relatively short periods of time.

Perishable foods should be refrigerated as soon as possible. Food products such as protein-rich dishes or cream-filled desserts should be refrigerated immediately after preparation. Allowing these foods to stand at room temperature gives bacteria a chance to grow rapidly.

Leftovers should be refrigerated as soon as possible. It is not advisable to keep leftovers more than two days. When storing, do not mix leftovers with fresh food. Food that has been held at room temperature for several hours should not be considered safe and cannot be made safe by refrigeration.

The use of shallow pans, about four inches deep, for refrigeration of large amounts of food allows the food to cool more rapidly than it would in deep containers. This rapid cooling allows less time for the growth of bacteria to occur. Stirring the food during cooling also helps to reduce the length of the cooling time.

A misconception held by some people is that food should be allowed to stand at room temperature for several hours and should not be put into the refrigerator while it is still warm or it will spoil. This is not true unless the cooling unit is overloaded and, as a result, the temperature of the refrigerator is raised to a level at which spoilage starts. If a large amount of hot food needs to be refrigerated, it can be cooled partially by placing the pans of food in cold water before putting them in the refrigerator.

IV. ***Keep hot food hot.*** Hot foods should be held at temperatures above 140° F. (60° C). It is important that foods such as pork, poultry, ground meats, and eggs be cooked thoroughly to destroy bacteria. The center of these meats and poultry should reach 165° to 170° F. (74° to 77° C).

Food may be infected:

- When held at a danger zone temperature for more than one to two hours
- When a person sneezes or coughs
- When hands have not been washed properly
- By handling food with hands instead of using the proper utensils
- By employees who are not well
- When it is handled by persons with cuts or infections on their hands

Sanitation Precautions

1. Cover the mouth when coughing or sneezing and then wash the hands thoroughly.
2. Do not prepare and serve food or handle eating utensils or pots when ill with a cold.
3. Effective dishwashing must be practiced.
4. Displayed food must not be touched by customers or exposed to their sneezes or cough droplets.
5. Thoroughly wash hands after a visit to the toilet.
6. Keep cold food cold, hot food hot. Cool food rapidly to safe temperatures.
7. Wash the hands and work surfaces after handling raw meat and poultry.
8. Avoid holding foods at danger zone temperatures.
9. Avoid unnecessary contact between food and the hands.

Dominance Drill

Directions

A. Cut off the tickets labeled safe and unsafe at the bottom of the page.
B. Separate the eight situations listed below. Read each situation and sort according to whether it is a safe or unsafe food handling practice.
C. On the back of each situation, write the rationale for your answer.

1. Food handler has an infected sore on his or her finger and is cutting chicken for salad.

2. Food handler sneezes while emptying dishwasher.

3. The country gravy is left on a cold range between the lunch and dinner rush.

4. Food handler washed hands with cool water after visiting the toilet.

5. Food handler rubbed itchy scalp while preparing the salads.

6. Food handler wore a hairnet while mixing and baking biscuits.

7. Food handler stays home from restaurant job because of a sore throat and cold.

8. During the two-hour break between breakfast and lunch service, leftover food was left on the steam table.

SAFE	UNSAFE

Name ____________________

Wash Your Hands
Lave Sus Manos

"Common decency and the state law require that you wash your hands."

1. Have you ever seen this sign? Do you think the state law is justified? This lab exercise will give you a chance to find out.

   You have two sterile agar plates. Using an indelible pen, mark the lid of plate A and plate B. Then mark the bottom of each plate so that each one is divided into three equal pie-shaped areas. Mark these areas 1, 2, and 3.

   Lift the lid of plate A and touch a fingertip to the agar in area 1. Then lightly touch a soiled or poorly cleaned kitchen utensil to the agar in area 2. Finally, drop a short piece of hair in area 3 and replace the lid. Do these things quickly to avoid bacteria in the air from contaminating your agar.

   Now wash your hands and the utensil with soap and water. Dry your hands and the utensil well. Lift the lid of plate B and lightly touch area 1 with a fingertip. Touch area 2 with the cleaned utensil. Leave area 3 undisturbed. Replace the lid on the plate.

   After the agar plates have been incubated for two to three days, count and compare the number of bacterial colonies found in the three areas of the two plates. Fill in the charts below and discuss your findings.

2. Comparison of the numbers of bacterial colonies found on the agar plates two to three days after exposure

A Plate (Before washing)		B Plate (After washing)	
Area	No. of Colonies	Area	No. of Colonies
1. Finger touch	________	1. Finger touch	________
2. Utensil touch	________	2. Utensil touch	________
3. Hair	________	3. Undisturbed	________

Name ______________________

Discharge Document

Directions:

Read the situations below and choose the most accurate response. Write a short statement telling why your response is correct.

1. George has an infected sore on his hand. He is in charge of chopping the food for potato salad. What should he do?
   a. Wash his hands thoroughly before beginning work.
   b. Put a bandage over the sore.
   c. Avoid handling food and utensils.

   Why? ______________________

   ____

2. Serena has just finished cutting up raw chicken for the House Special—Chicken Stir Fry. She is running late in her preparations for the lunch rush. What should she do before she starts her next task?
   a. Wipe the cutting board with a damp cloth.
   b. Go on to her next task of cutting potatoes for salad and then do a thorough cleanup.
   c. Clean the cutting board with detergent and water and then wipe with a disinfectant sponge.

   Why? ______________________

   ____

3. The leftover turkey from lunch is to be used again at dinner. How should it be handled?
   a. Leave food on the steam table.
   b. Take food away from heat so it will not dry out.
   c. Refrigerate turkey quickly.

   Why? ______________________

   ____

This is to certify that ______________ has successfully completed the tasks assigned to him or her while on duty with the Corps to Wipe Out Food-Borne Illness. He or she is hereby discharged with all rights, honors, and privileges so accorded to veterans of the corps.

____

Commander-in-Chief

J-189

Food Additives Glossary

Additives that maintain or improve nutritional value—Traditionally, fortification and enrichment have been made to add nutrients lacking in the diet and to restore nutrients that were destroyed during processing and storage. More recently, vitamins, minerals, and amino acids have been added to foods to ensure that foods such as cheese substitutes and other processed foods are nutritionally balanced. However, it should be noted that adding nutrients that are already abundant in the diet provides no extra benefit but does increase the cost. An example would be a breakfast cereal fortified to 100 percent of the RDA with nutrients that are provided elsewhere in the diet. Excessive amounts of some of the nutrients can be toxic. Some of the additives in this category are as follows:

1. *Alpha tocopherols* are a source of vitamin E and are used to enrich and fortify cereals and grain products.
2. *B vitamins* (thiamin, thiamin hydrochloride, thiamin mononitrate, riboflavin, niacin, niacinamide) are used in flour, breads, cereals, rice, and pasta products to replace vitamins lost in processing or to increase amounts of the nutrient occurring naturally in the product.
3. *Beta carotene* is the source of vitamin A that is used in margarine to make it comparable to butter in vitamin A content. Beta carotene is a naturally occurring compound.
4. *Iodine (potassium iodide)*, which is found in iodized salt, is used to combat goiter, an iodine-deficiency disease.
5. *Iron* is used in grain products to replace losses due to processing and to fortify grain products to combat iron-deficiency anemia.
6. *Vitamin A* is used in low-fat, skim, or nonfat dry milk to replace the vitamin A lost when fat is removed from the product; in margarine to add vitamin A to make it comparable to margarine; and in cereals to fortify the product.
7. Vitamin C (ascorbic acid) is added to beverages, beverage mixes, and processed fruit to replace vitamin C destroyed in processing or to increase existing vitamin C levels.
8. *Vitamin D (D-2, D-3)* is added to milk to combat rickets, which is caused by a vitamin D deficiency. It is also added to cereals. An excess of vitamin D can be toxic.

Additives that maintain freshness—These additives are preservatives and can be classed into two categories—antimicrobials and antioxidants:

1. *Antimicrobials* prevent food spoilage from bacteria, molds, fungi, and yeast by creating a growing environment that is not conducive to the organism or by interfering in some way with the organism's life cycle. These additives also extend the shelf life of the product and protect natural color and flavor. Some additives found in this category are:
   a. Ascorbic acid (vitamin C) is used in fruit products and acidic foods.
   b. Benzoic acid (sodium benzoate) is used in fruit products, acidic foods, and margarine.
   c. Citric acid is used in acidic foods.
   d. Lactic acid (calcium lactate) is used in olives, cheeses, frozen dessert, and some beverages.
   e. Parabens (butylparaben, heptylparaben, methylparaben, propylparaben) is used in beverages, cake-type pastries, salad dressings, and relishes.
   f. Propionic acid (calcium propionate, potassium propionate, sodium propionate) is used in breads and other baked goods.
   g. Sodium diacetate is used in baked goods.
   h. Sodium erythorbate is used in cured meats.

   i. Sodium nitrate, sodium nitrite is used in cured meats, fish, and poultry.
   j. Sorbic acid (calcium sorbate, potassium sorbate, sodium sorbate) is used in cheeses, syrups, cakes, beverages, mayonnaise, fruit products, margarine, and processed meats.

2. *Antioxidants* delay or prevent undesirable changes in color, flavor, or texture due to oxidation. They also prevent or delay rancidity in foods with unstable oils. Some additives found in this category are:
   a. Ascorbic acid (vitamin C) is used in processed fruits and baked goods.
   b. BHA (butylated hydroxyanisole) is used in bakery products, cereals, snack foods, fats, and oils.
   c. BTH (butylated hydroxytoluene) is used in bakery products, cereals, snack foods, fats, and oils.
   d. Citric acid is used in fruits, snack foods, cereals, and instant potatoes.
   e. EDTA (ethylenediaminetetraacetic acid) is used in dressings, sauces, and margarine.
   f. Propylgallate is used in cereals, snack foods, and pastries.
   g. TBHQ (tertiary butylhydroquinone) is used in snack foods, fats, and oils.
   h. Tocopherols (including vitamin E) are used in oils and shortenings.

Additives that help in processing and preparation.—These additives have many different functions and fall into the following seven classes:

1. *Emulsifiers* help to distribute evenly tiny particles of one liquid into another and are needed to improve homogeneity, consistency, stability, and texture of the product. Some additives found in this category are as follows:
   a. Carrageenan is used in chocolate milk, canned milk drinks, and whipped toppings.
   b. Dioctyl sodium sulfosuccinate is used in cocoa.
   c. Lecithin is used in margarine, dressings, chocolate, frozen desserts, baked goods.
   d. Mono- and diglycerides are used in baked goods, peanut butter, and cereal.
   e. Polysorbate 60, 65, and 80 are used in gelatin desserts, pudding desserts, dressings, baked goods, nondairy creamers, and ice cream.
   f. Sorbitan monostearate is used in cakes, toppings, and chocolate.

2. *Stabilizers, thickeners, and texturizers* impart body, improve consistency and texture, stabilize emulsions, and affect the appearance and mouth feel of the product. Many of these additives are natural carbohydrates which absorb the water in the food to produce the desired effect. Some additives in this category are as follows:
   a. Alginates (ammonium alginate, calcium alginate, potassium alginate, sodium alginate), are used in dessert-type dairy toppings and confections.
   b. Carrageenan is used in frozen desserts, puddings, syrups, and jellies.
   c. Cellulose derivatives are used in breads, ice cream, confections, and diet foods.
   d. Flour is used in sauces, gravies, and canned foods.
   e. Furcellaran is used in frozen desserts, puddings, and syrups.
   f. Modified food starch is used in sauces, soups, pie fillings, canned meals, and snack foods.
   g. Pectin is used in jams, jellies, fruit products, and frozen desserts.
   h. Propylene glycol is used in baked goods, frozen desserts, and dairy spreads.
   i. Vegetable gums (guar gum, gum arabic, gum ghatti, karaya gum, locust [carob] bean gum, tragacanth gum, larch gum) are used in chewing gum, sauces, desserts, dressings, syrups, beverages, fabricated foods, cheeses, and baked goods.

3. *Leavening agents* affect the cooking results of a product by improving the texture and increasing the volume. They also affect the flavor of the product. Some additives in this category are as follows:
   a. Baking powder, double-acting (sodium bicarbonate, sodium aluminum sulfate, calcium phosphate) is used in quick breads, and cake-type baked goods.
   b. Baking soda is used in quick breads and cake-type baked goods.
   c. Yeast is used in breads and baked goods.
4. *pH control agents* control, by changing or maintaining, the acidity or alkalinity of a product. They can affect the texture, taste, and wholesomeness of the product. Some additives found in this category are as follows:
   a. Acetic acid (sodium acetate) is used in candies, sauces, dressings, and relishes.
   b. Adipic acid is used in beverages, bottled drinks, and gelatin bases.
   c. Calcium lactate is used in fruits, vegetables, dry milk, and condensed milk.
   d. Citric acid (sodium citrate) is used in fruit products, candies, beverages, and frozen desserts.
   e. Fumaric acid is used in dry dessert bases, confections, and powdered soft drinks.
   f. Lactic acid is used in cheeses, beverages, and frozen desserts.
   g. Phosphoric acid (phosphates) is used in fruit products, beverages, ice sherbets, soft drinks, oils, and baked goods.
   h. Tartaric acids (tartrates) are used in confections, some dairy desserts, baked goods, and beverages.
5. *Humectants* are used to retain moisture in a product and keep it from drying out. Some additives in this cagetory are as follows:
   a. Glycerine is used in flaked coconut.
   b. Glycerol monostearate is used in marshmallows.
   c. Propylene glycol is used in confections and pet foods.
   d. Sorbitol is used in soft candies and gum.
6. *Maturing and bleaching agents and dough conditioners* are used to accelerate the aging process, develop the gluten characteristics of flour, and improve baking qualities. Some additives found in this category are:
   a. Azodicarbonamide is used in cereal flour and breads.
   b. Bromates (calcium bromate and potassium bromate) are used in bread.
   c. Peroxides (acetone peroxide, benzoyl peroxide, hydrogen peroxide) are used in flour, breads, and rolls.
   d. Sodium stearyl fumarate is used in yeast-leavened breads, instant potatoes, and processed cereals.
7. *Anti-caking agents* help keep salts and powders free-flowing and prevent caking, lumping, or clustering of a finely powdered or crystalline product. Some additives found in this category are as follows:
   a. Calcium silicate is used in table salt, baking powder, and other powdered foods.
   b. Iron ammonium citrate is used in salt.
   c. Silicon dioxide is used in table salt, baking powder, and other powdered foods.
   d. Yellow prussiate of soda is used salt.

Additives that help make food more appealing—These additives fall into four categories and include both natural and artificial additives additives:

1. *Flavor enhancers* are substances which supplement, magnify, or modify the original taste and/or aroma of a product without imparting a characteristic taste or aroma of its own. Some additives in this category are as follows:
   a. Disodium guanylate is used in canned vegetables.
   b. Disodium inosinate is used in canned vegetables.
   c. Hydrolyzed vegetable protein is used in processed meats, gravy mixes, sauce mixes, and fabricated foods.
   d. MSG (monosodium glutamate) is used in oriental foods, soups, and foods with animal protein.
   e. Yeast-malt sprout extract is used in gravies and sauces.
2. *Flavoring agents* make foods taste better, improve natural flavor, and restore flavors lost in processing. Some additives in this category are as follows:
   a. Spices, herbs, and other natural seasonings and flavorings are found in many products.
   b. Vanilla (natural) is used in baked goods.
   c. Vanilla (synthetic) is used in baked goods.
3. *Natural and synthetic colors* are used to increase consumer appeal and product acceptance by giving a desired, appetizing, or characteristic color. These additives are used in a wide range of foods. Some additives in this category are as follows:
   a. Annatto extract
   b. Caramel
   c. Caramine
   d. Carrot oil
   e. Cochineal extract
   f. Dehydrated beets or beet powder
   g. Fruit juices
   h. Grape skin extract
   i. Paprika and paprika oleoresin
   j. Saffron
   k. Toasted partially defatted cooked cottonseed flour
   l. Turmeric and turmeric oleoresins
   m. Vegetable juices

   Colors that can be derived from either natural or synthetic sources are as follows:
   a. Beat carotene
   b. Beta-apo-8' carotenal
   c. Canthaxanthin
   d. Riboflavin

   Synthetic colors include the following:
   a. Citrus Red No. 2
   b. FD & C Blue No. 1
   c. FD & C Red No. 3
   d. FD & C Red No. 40
   e. FD & C Yellow No. 5
   f. Ferrous gluconate
   g. Titanium dioxide
4. *Sweeteners* make the aroma or taste of a food more agreeable or more pleasurable. These additives come in two groups: (1) nutritive sweeteners that contain calories, and (2) and

nonnutritive sweeteners that do not contain calories. Some of the additives found in this category are as follows:

a. Corn syrup and corn syrup solids are used in cereals, baked goods, candies, processed foods, processed meats, and beverages.
b. Dextrose is used in cereals, baked goods, candies, processed foods, and processed meats.
c. Fructose is used in cereals, baked goods, candies, processed foods, processed meats, and beverages.
d. Glucose is used in cereals, baked goods, candies, processed foods, processed meats, and beverages.
e. Honey is used in cereals, baked goods, candies, processed foods, processed meats, beverages, and frozen desserts.
f. Invert sugar is used in cereals, baked goods, candies, processed foods, processed meats, and frozen desserts.
g. Sucrose (table sugar) is used in cereals, baked goods, candies, processed foods, processed meats, beverages, and frozen desserts.

Nonnutritive sweeteners

Saccharin is used in special dietary foods, soft drinks, other beverages, and powdered/granulated sweetners.

Aspartame is used in soft drinks, other beverages, and powdered/granulated sweeteners.

Name ______________________________

Food Processing Techniques

Processing technique	Food examples	Advantages of process	Disadvantages of process

Can you make any statements about all processed foods?

Food Processing Techniques Key

Processing technique	Food exampies	Advantages of process	Disadvantags of process
Heating (pasteurization)	Milk Cheese	Increased food safety Increased convenience	Decreased nutrients
Cooling Freezing	Ice cream Milk Eggs	Increased food safety Increased storage time	Increased cost
Drying	Apples Bananas	Decreased weight Increased storage time	Decreased nutrients Increased cost
Adding ingredients	Milk Bread Ice cream	Increased nutrients Improved taste, texture, and storage time	Increased cost May increase unnecessary additives
Removing ingredients	Evaporated milk Nonfat milk	Removes unwanted items	Decreased nutrients Increased cost
Cutting	Vegetables Fruit	Increased convenience	Decreased nutrients Increased cost
Grinding	Meat Potatoes Fruits	Increased convenience	Decreased nutrients Increased cost
Canning	Fruits Vegetables Processed foods, such as baked beans, spaghetti	Increased convenience Increased storage time	May decrease nutrients Increased cost Increased additives such as salt, sugar, and fat

Name ____________________

Food Diary

Keep a diary of everything you eat for the next two days:

Day 1 Name of food	Day 2 Name of food

Name ______________________

Grocery Store

Name of fruit or vegetable you have chosen ______________________

Go to a grocery store and list *all* the different forms of this food that you can find; then complete this chart:

Name of food product	Ingredients contained	Cost	Time to prepare	Equipment needed to prepare

What conclusions can you draw after completing this shopping experience?

Food Processing Index Cards

Name of process: Heating

Food example: Milk

Disadvantage of process: Decrease in nutrients

Advantage of process: Food safety

Name of process: Cooling

Food example: Ice cream

Disadvantage of process: Increased cost

Advantage of process: Increase storage time

Name of process: Drying

Food example: Banana chips

Advantage of process: Lightweight

Disadvantage of process: Tastes dry

Name of process: Adding ingredients

Food example: Bread

Advantage of process: Increased nutrients

Disadvantage of process: Increased cost

Name of process: Removing ingredients

Food example: Nonfat milk

Advantage of process: Decrease in calories

Disadvantage of process: Decrease in nutrients unless fortified

Name of process: Canning

Food example: Canned fruit

Advantage of process: Increased storage time

Disadvantage of process: Increased salt, sugar

Food Processing Problems

1. Mike is going on a backpacking trip. What foods would you recommend that he take, and why?
2. Mary wants to know, "What are the least expensive foods to buy?" What do you suggest?
3. Bob is watching his weight. What kinds of foods might he want to choose?
4. Kathy has an apple tree in her yard. The apples have ripened and she cannot eat them all before they spoil. What could she do?
5. Dick and Jane often have unexpected guests arrive for dinner. They want to know what types of food to buy that will store well until they need to use them. What would you recommend?
6. Laura has a very busy schedule with school and an after-school job. Her mom also has a job. There is little time to prepare dinner for the family during the week. What kinds of foods and what methods could Laura's family choose to help with the weekly dinner problem?

Name ____________________

Food Processing

1. List the different types of food processing discussed in class:
____
____
____
____
____
____

2. One advantage of drying foods is ______________________________
____
____

3. One disadvantage of heating foods is ______________________________
____
____

4. Ingredients are added to food items because ______________________________
____
____
____

5. An example of a food product which is heated is ______________________________
____

Name ______________________

Word Scramble

1. Food processing increases the _______ of foods available to purchase.
yaitrev

2. Food processing may also increase the _______ time of a product.
arteogs

3. Processed foods are often more ________ to prepare.
vcteeonnin

4. These foods often ________ more to purchase.
stoc

5. Processing may remove some of the _______ from foods.
tesnirunt

6. A number of people are concerned that some of the _______ used in processed foods may be unsafe to eat.
vdseadtii

7. Some people think that many food additives are not _______ .
yeecnrsas

Name ______________________________

Processed Foods

1. A processed food is ____

2. Foods are processed to ____

____

____

3. Three advantages of food processing are ________________________________

____

____

____

____

4. Three disadvantages of food processing are ______________________________

____

____

____

5. Three additives used in food processing and what they are used for are __

____

____

____

____

6. Three ways foods can be changed by processing are _______________________

____

____

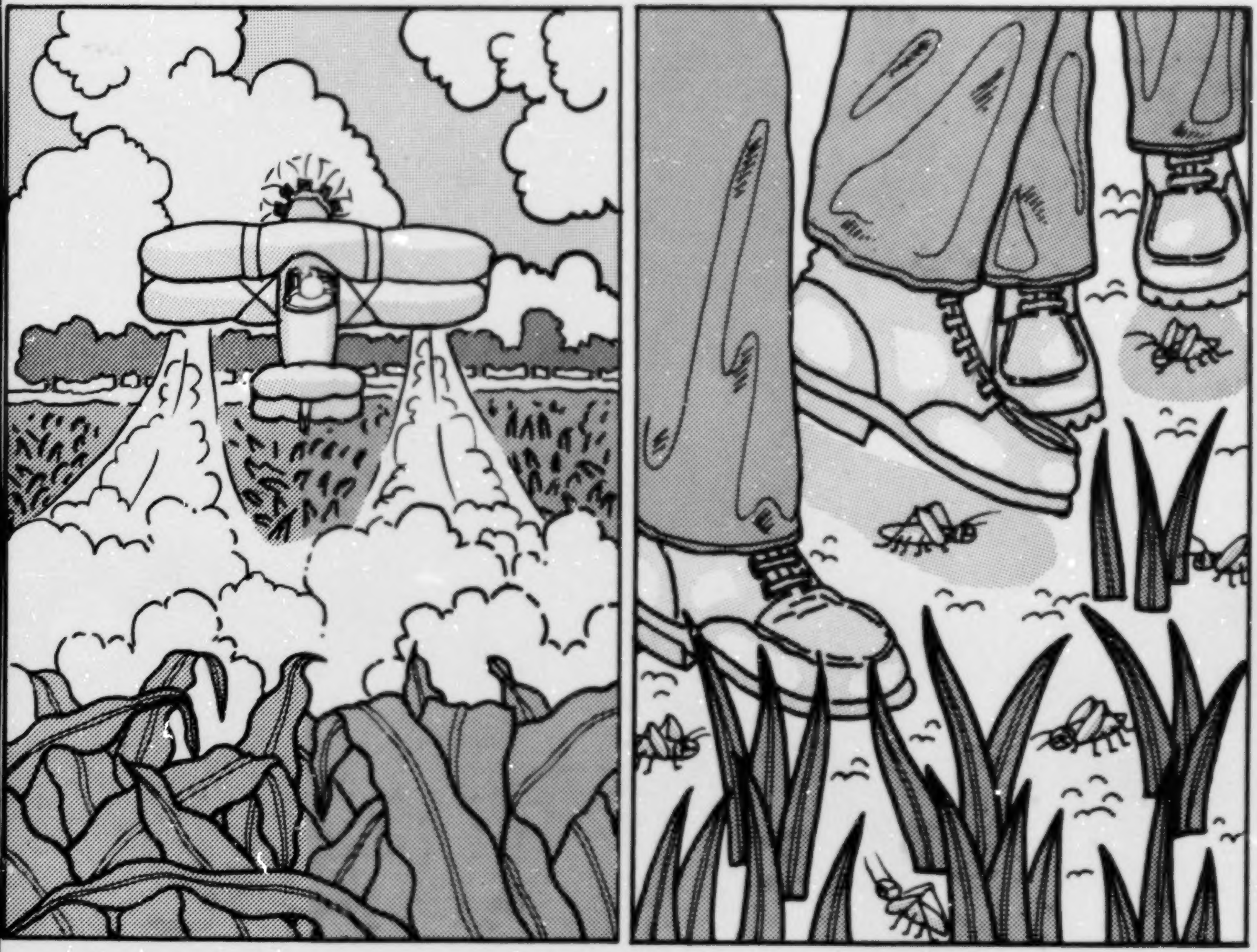
____

____

7. A processed food I like is ____

8. A processed food I do not like is ______________________________________

Transparency 1



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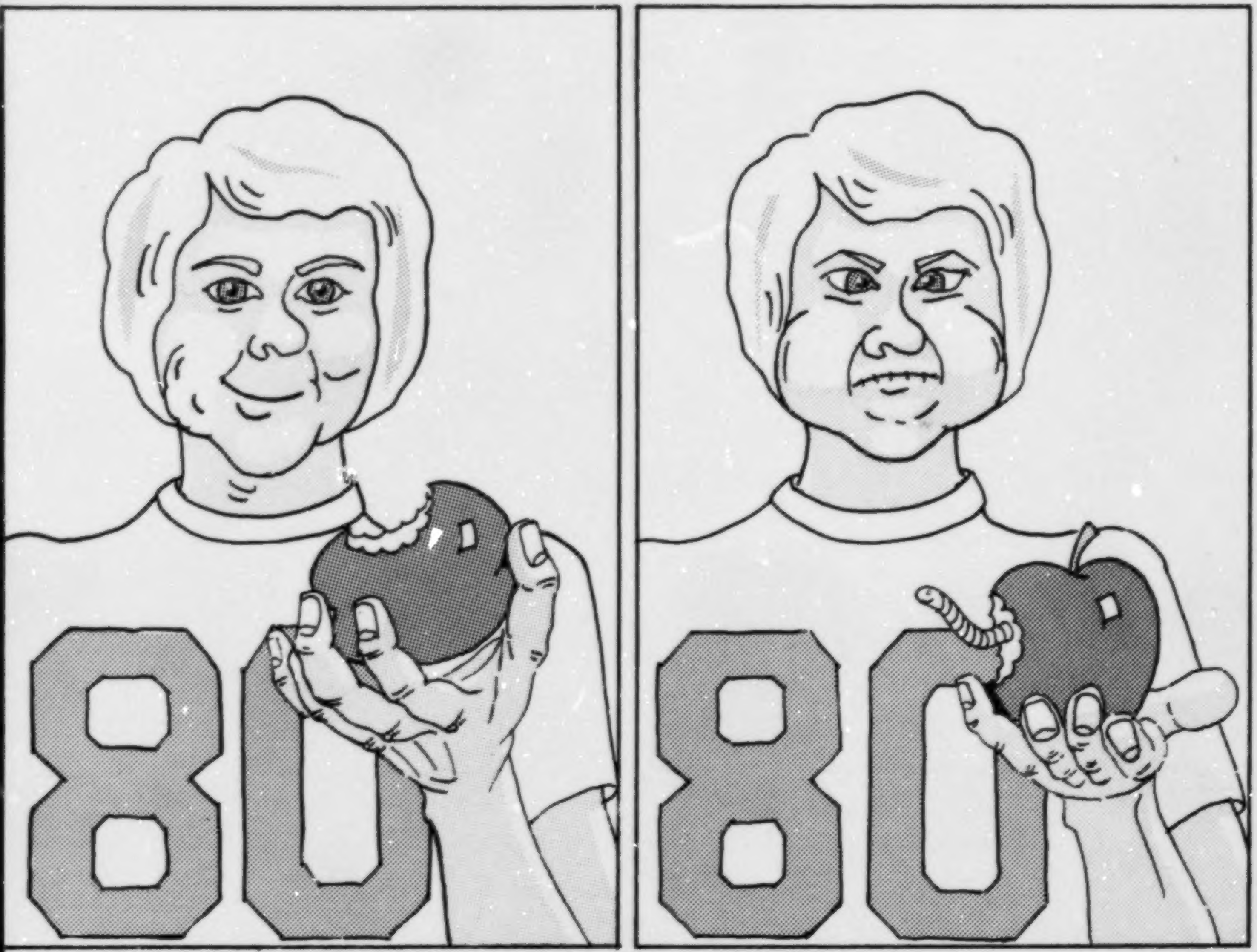

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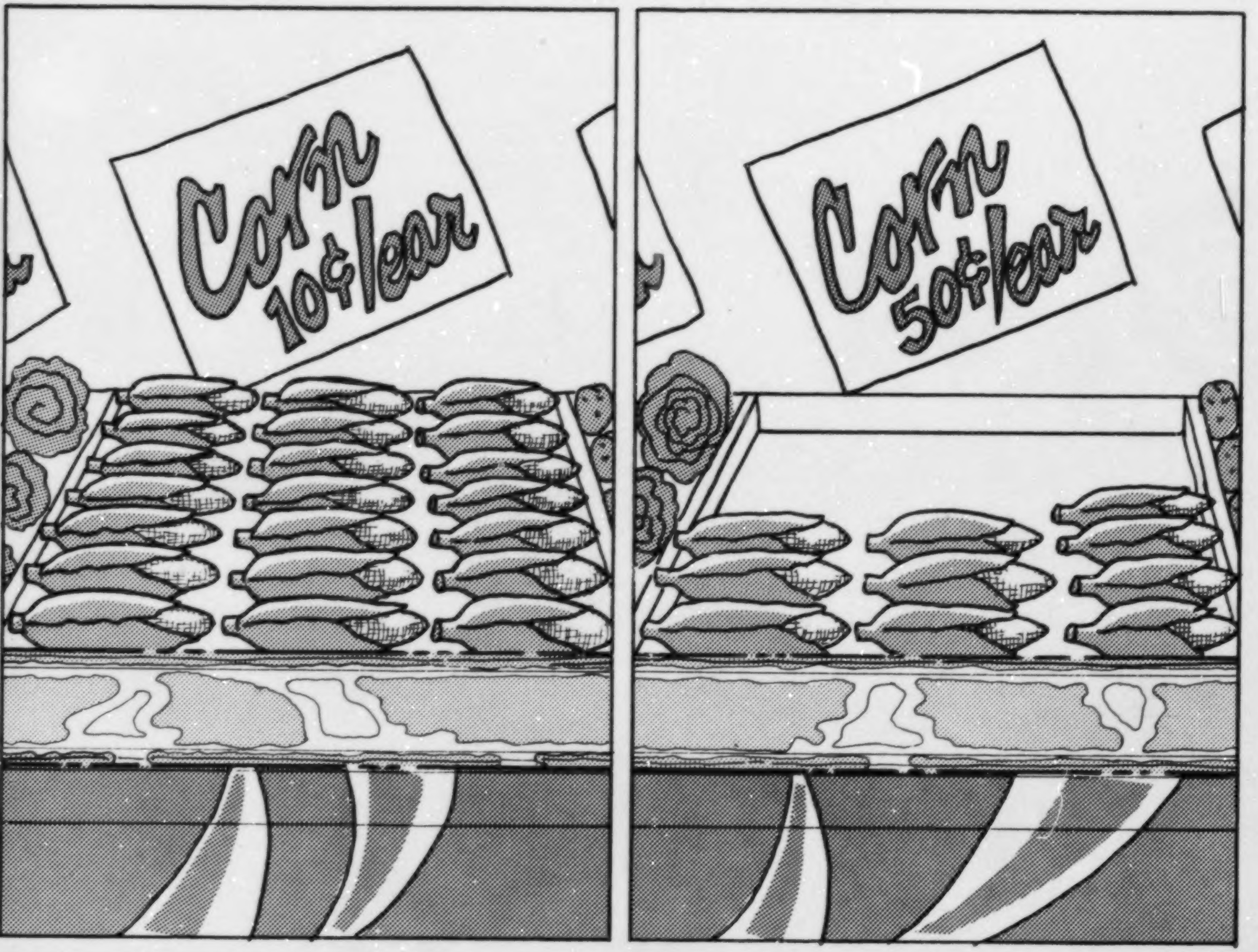
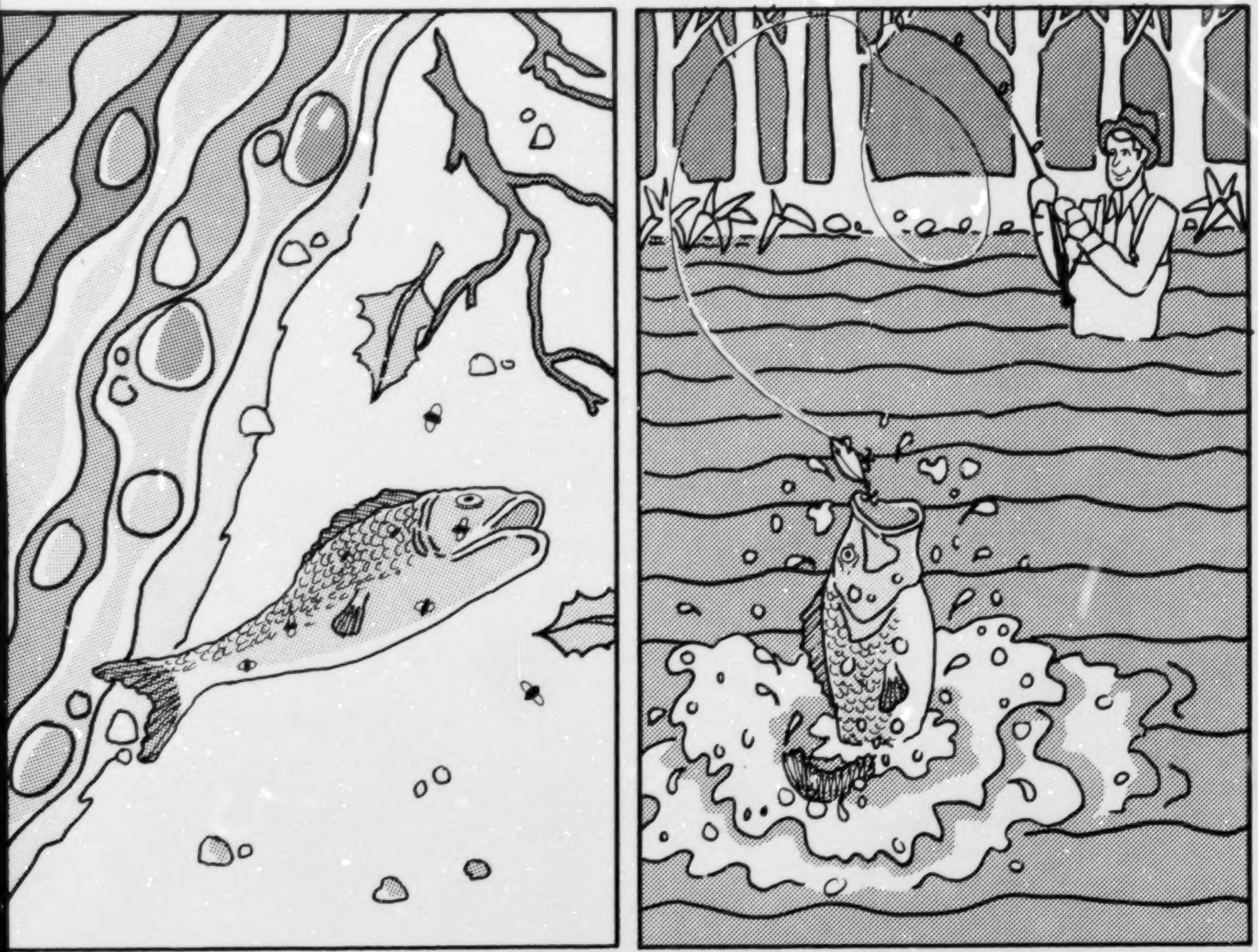

Corn 10¢/ear
Corn 50¢/ear

Transparency 4



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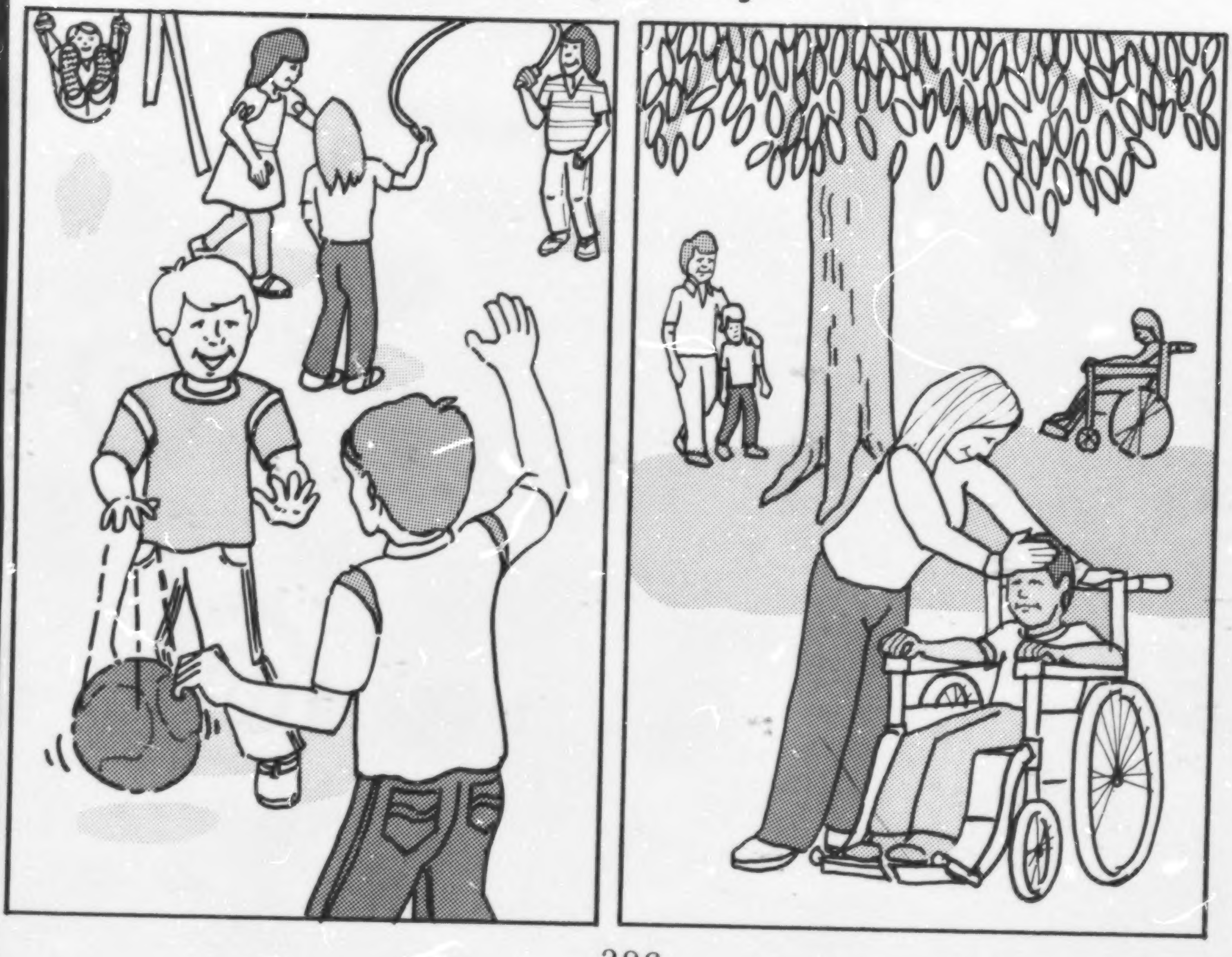

Arguments in Favor of the Use of Food Additives

Most people recognize the importance of additives to our food supply. They are added to foods to enhance or improve the taste, texture, appearance, and shelf life. They replace more expensive ingredients. The use of additives has helped to lower costs to the consumer.

A. What are the types of additives?

1. *Antioxidants* control discoloration of foods (such as fruits) caused by oxidation. They protect oil-containing foods from rancidity. Large quantities of perishable foods can be shipped long distances, reducing shipping costs. Foods have a longer shelf life and stay fresh longer.
2. *Antimicrobial preservatives* inhibit the growth of mold, bacteria, and yeast which spoil food. Examples are sorbic acid and sodium benzoate.
3. *Emulsifiers* permit the dispersion of tiny particles or globules of one liquid into another. For example, under ordinary circumstances, oil and water will not mix. If, however, an emulsifier is added, they will mix and remain an emulsion. Examples are mono- and digylcerides.
4. *Stabilizers and thickeners* are used to achieve the smooth, uniform texture and consistency of many foods.
5. *Food colors* restore the natural colors to many processed foods or create pleasant colors for manufactured food products. Consumers have come to expect food products to have uniform color, and food colors can be used for this purpose.
6. *Artificial flavors and enhancers* can improve the flavor of foods. They are less costly than natural flavors.
7. *Nutrients* can improve the nutritional value of a food.

B. What are the arguments for their use?

In 1958 the major law regulating food additives was passed. Additives that were already in use were accepted as being safe. These chemicals have been termed "generally recognized as safe" (GRAS).

Additives help to provide nutritious, plentiful, convenient, varied, good tasting, and economical food to the American public. The cost to the consumer is lower. Food is available in a larger and more attractive supply.

Additives are used as a means to provide an adequate and appealing food supply to our nation.

Arguments Against the Use of Food Additives

The safety and need for additives should be carefully assessed. Much of our food is highly processed and preserved. Since 1955 the number of chemicals used as additives has doubled.

A. What are the types of food additives and how are they used?

1. *Artificial flavors and enhancers* are cheaper than natural flavors and can take the place of natural flavors. They add flavor to processed foods.
2. *Antioxidants* control discoloration of foods caused by oxidation and protect oil-containing foods from rancidity. Although foods have a longer shelf life, there may still be vitamin loss.
3. *Antimicrobial preservatives* inhibit the growth of mold, bacteria, and yeast which spoil food. Examples are sorbic acid and sodium benzoate.
4. *Emulsifiers* permit the dispersion of tiny particles or globules of one liquid into another. For example, under ordinary circumstances, oil and water will not mix. If, however, an emulsifier is added, they will mix and remain an emulsion. Examples are mono- and diglycerides.
5. *Stabilizers and thickeners* are used to achieve the smooth, uniform texture and consistency of many foods.
6. *Food colors* restore the natural colors to many processed foods or create pleasant colors for manufactured food products. Colorings may also be added to natural foods. Orange skins may be dyed to camouflage their natural splotches, and red potatoes and sweet potatoes are frequently dyed red.
7. *Nutrients* can improve the nutritional quality of a food.

B. What are the arguments against their use?

In investigating the safety of additives, each one must be examined individually. Some are safe at all levels, and some are safe at low concentrations but toxic at high concentrations.

The major law regulating food additives was passed in 1958. Additives that were already in use were accepted as being safe. These chemicals have been termed "generally recognized as safe" (GRAS). However, a position on the GRAS list does not necessarily guarantee safety. Cyclamate was on the list until 1969, when it was found to cause cancer in rats. Many of the compounds on the GRAS list are now being tested for toxicity.

It has been sometimes charged that the food industry is using additives without regard to public health, placing profits above people.

Additives are used in excess, resulting in inferior, unwholesome, and unsafe foods.

Situation Cards

1.
Pantomime a food handler with unkept hair preparing a meal.

2.
Pantomime a food handler with a cold preparing a meal.

3.
Pantomime a food handler mixing salad with dirty hands. (not using utensils)

4.
Pantomime a food handler scooping spilled food off the floor and putting it back into the serving dish.

5.
Pantomime a food handler using a dish towel to mop the floor and then to wipe the dishes.

6.
Pantomime a food handler licking the spoon while mixing a cake.

Name ____________________

Factors Important to You About Food Handlers

Situation	Unsafe procedure	Safe procedure	Reasons
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Values statements:

One of the things which I value about food handlers is ____________________

____

One of the things which I value about food handlers is ____________________

Other Publications Available from the Department of Education

This nutrition education curriculum guide is one of approximately 500 publications that are available from the California State Department of Education. Some of the more recent publications and those of interest to the users of this document are the following:

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California Public School Directory	12.50
Commodity Administrative Manual, Institutions Other Than Schools (In binder) (1984)	11.00
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Eating Habits of Students in California Public Schools, A Summary (1981)	2.50
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Handbook for Planning an Effective Reading Program (198[illegible])	1.50
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Improving the Attractiveness of the K–12 Teaching Profession (1983)	3.25
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Nutrition Education—Choose Well, Be Well: A Curriculum Guide for High School	8.00
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The Relationship Between Nutrition and Student Achievement, Behavior, and Health (1980)	4.00
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Science Framework for California Public Schools (1978)	1.65
School Nutrition and Food Service Techniques for Children with Exceptional Needs (1982)	1.00
Simplified Buying Guide (1981)	1.50
Student Achievement in California Schools	2.00

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